

Journal of immunotherapy.
v. 31, no. 9 (Nov-Dec 2008)
General Collection
W1 JQ679G
2008-10-29 06:31:52

• NOVEMBER - DECEMBER 2008

Full Text
OID

JOURNAL OF Immunotherapy

OFFICIAL JOURNAL OF INTERNATIONAL SOCIETY FOR
BIOLOGICAL THERAPY OF CANCER

**WEB-BASED MANUSCRIPT
SUBMISSION NOW AVAILABLE!**
See journal Web site for details.
www.immunotherapy-journal.com



PROPERTY OF THE
**NATIONAL
LIBRARY OF
MEDICINE**



Wolters Kluwer
Health

Lippincott
Williams & Wilkins

Abstracts for the 23rd Annual
Scientific Meeting of the International
Society for Biological Therapy of Cancer

JOURNAL OF Immunotherapy

OFFICIAL JOURNAL OF INTERNATIONAL SOCIETY
FOR BIOLOGICAL THERAPY OF CANCER

VOL. 31, NO. 9, November–December 2008

EDITOR-IN-CHIEF

Steven A. Rosenberg, M.D., Ph.D.
Bethesda, Maryland

ASSOCIATE EDITORS

Michael B. Atkins, M.D.
Patrick Hwu, M.D.
Michael T. Lotze, M.D.
Francesco Marincola, M.D.
James J. Mulé, Ph.D.
Nicholas P. Restifo, M.D.

EDITORIAL COORDINATOR

Hannah Lee
Phone: 215-253-3551
Fax: 215-220-3450
email: journalofimmunotherapy@gmail.com

**INTERNATIONAL SOCIETY FOR BIOLOGICAL
THERAPY OF CANCER**

Tara Withington, Executive Director
555 E. Wells Street
11th Floor
Milwaukee, WI 53202-3823
Tel: (414) 271-2456; fax: (414) 276-3349
email: info@isbtc.org

PUBLICATION STAFF

David Myers, Publisher
Jonathan Pine, Senior Executive Editor

EDITORIAL BOARD

Michael Atkins
Richard Barth
Ernest Borden
Alfred Chang
Robert O. Dillman
Mary L. Disis
Janice P. Dutcher
Alexander Eggermont
Soldano Ferrone
Bernard A. Fox
Michael S. Gordon
Ronald B. Herberman
Peter Hersey
Yutaka Kawakami
Ulrich Keilholz
Steven K. Libutti
Albert F. LoBuglio
Kim A. Margolin
James Lee Murray
Elizabeth A. Repasky
Licia Rivoltini
Pedro Romero
Michael Salgaller
Noriyuki Sato
Carmen Scheibenbogen
Craig L. Slingluff, Jr.
Paul M. Sondel
Mario Sznol
Walter Urba
Louis Weiner
Christine A. White
Jon M. Wigginton

Contents

Review Article

793 Dendritic Cells: A Critical Player in Cancer Therapy?

Anna Karolina Palucka, Hideki Ueno, Joseph Fay, and Jacques Banchereau

Clinical Studies

806 Donor Regulatory T Cells Identified by FoxP3 Expression but Also by the Membranous CD4⁺CD127^{low/neg} Phenotype Influence Graft-versus-tumor Effect After Donor Lymphocyte Infusion

Yosr Hicheri, Abdelghani Boucheikioua, Yamina Hamel, Adeline Henry, Hélène Rouard, Cécile Pautas, Jean-Louis Beaumont, Mathieu Kuentz, Catherine Cordonnier, José L. Cohen, and Sébastien Maury

812 A Phase 1/2 Study of Autologous Neuroblastoma Tumor Cells Genetically Modified to Secrete IL-2 in Patients With High-risk Neuroblastoma

Heidi V. Russell, Douglas Strother, Zhuyong Mei, Donna Rill, Edwina Popek, Ettore Biagi, Eric Yvon, Malcolm Brenner, and Raphael Rousseau

820 An MVA-based Vaccine Targeting the Oncofetal Antigen 5T4 in Patients Undergoing Surgical Resection of Colorectal Cancer Liver Metastases

Eyad Elkord, Adam Dangoor, Noel L. Drury, Richard Harrop, Deborah J. Burt, Jan W. Drijfhout, Caroline Hamer, Danielle Andrews, Stuart Naylor, David Sherlock, Robert E. Hawkins, and Peter L. Stern

(continued next page)

Journal of Immunotherapy (ISSN: #1524-9557) is published nine times a year in January, February, April, May, June, July, September, October, and November by Lippincott Williams & Wilkins, 16522 Hunters Green Parkway, Hagerstown, MD 21740-2116. Business and production offices are located at 530 Walnut Street, Philadelphia, PA 19106-3621. Periodicals postage paid at Hagerstown, MD and at additional mailing offices. Copyright © 2008 by Lippincott Williams & Wilkins.

Annual Subscription Rates: *United States* - \$600 Individual, \$1585 Institution, \$282 In-training. *Rest of World* - \$700 Individual, \$1867 Institution, \$296 In-training. Single copy rate \$206. All prices include a handling charge. Subscriptions outside of North America must add \$14 for airfreight delivery. United States residents of AL, CO, DC, FL, GA, HI, IA, ID, IN, KS, KY, LA, MD, MO, ND, NM, NV, PR, RI, SC, SD, UT, VT, WA, WV add state sales tax. The GST tax of 7% must be added to all orders shipped to Canada (Lippincott Williams & Wilkins' GST Identification #895524239, Publications Mail Agreement #616346. Subscription prices outside the United States must be prepaid. Prices subject to change without notice. Visit us online at www.lww.com.

Postmaster: Send address changes to *Journal of Immunotherapy*, P.O. Box 1550, Hagerstown, MD 21740.

Contents (continued)

- 830 Clinical-scale Lentiviral Vector Transduction of PBL for TCR Gene Therapy and Potential for Expression in Less-differentiated Cells**
Shicheng Yang, Steven A. Rosenberg, and Richard A. Morgan
- 840 Tumor Antigen-specific T-cells are Present in the CD8 $\alpha\alpha$ ⁺ T-cell Effector-memory Pool**
Isabelle Magalhaes, Nalini Kumar Vudattu, Elke Jäger, and Markus J. Maeurer
- 849 Immune Responses Detected in Urothelial Carcinoma Patients After Vaccination With NY-ESO-1 Protein Plus BCG and GM-CSF**
Padmanee Sharma, Dean F. Bajorin, Achim A. Jungbluth, Harry Herr, Lloyd J. Old, and Sacha Gnjatovic

Basic Studies

- 858 Anisomycin Inhibits the Behaviors of T cells and the Allogeneic Skin Transplantation in mice**
Feiyue Xing, Zhe Yu, Jing Liu, Jingfang Di, Shan Zeng, Di Chen, Ling Chen, Zhiyuan Fang, Zhongfeng Guo, Shan Pan, Jiongkun Wang, Yuting Li, Wenting Hao, Zhenhua Fan, Zhenping Teng, Guoliang Chen, Zhencheng Chen, Chengquan Mao, Yutian Long, and Na Liu
- 871 A Novel CD19-directed Recombinant Bispecific Antibody Derivative With Enhanced Immune Effector Functions for Human Leukemic Cells**
Christian Kellner, Joerg Bruenke, Julia Stieglmaier, Michael Schwemmlein, Michael Schwenkert, Heiko Singer, Kristin Mentz, Matthias Peipp, Peter Lang, Fuat Oduncu, Bernhard Stockmeyer, and Georg H. Fey
- 885 Intratumoral Dendritic Cells and Chemoradiation for the Treatment of Murine Squamous Cell Carcinoma**
Jeffrey S. Moyer, Ji Li, Shuang Wei, Seagal Teitz-Tennenbaum, and Alfred E. Chang
- 896 Immune Response of Human Propagated $\gamma\delta$ -T-Cells to Neuroblastoma Recommend the V δ 1⁺ Subset for $\gamma\delta$ -T-cell-based Immunotherapy**
Karin Schilbach, Klaus Frommer, Sybille Meier, Rupert Handgretinger, and Matthias Eyrich
- 906 Combined Anti-CD40 Conditioning and Well-timed Immunization Prolongs CD8⁺ T Cell Accumulation and Control of Established Brain Tumors**
Christina M. Ryan, Kevin Staveley-O'Carroll, and Todd D. Schell

(continued next page)

Contents (continued)

Abstracts

- 921 Abstracts for the 23rd Annual Scientific Meeting of the International Society for Biological Therapy of Cancer
- 972 Author Index

This journal is listed in *Index Medicus/MEDLINE Current Contents/Life Sciences Scisearch, Biomedical Database, BIOSIS, EMBASE/Excerpta Medica, Chemical Abstracts, and Current Awareness in Biological Sciences.*

Address for non-member subscription information, orders, or change of address: Lippincott Williams & Wilkins, P.O. Box 1580, Hagerstown, MD 21741-1580; phone 800-638-3030 (outside the United States 301-223-2300); fax 301-223-2400. In Japan, contact LWW Igaku-Shoin Ltd., 3-23-14 Hongo, Bunkyo-ku, Tokyo 113-0033; phone 81-3-5689-5400; fax 81-3-5689-5402. In Bangladesh, India, Nepal, Sri Lanka, and Pakistan, contact Globe Publications Pvt. B-13 3rd Floor, A Block, Shopping Complex, Naraina Vihar, Ring Road, New Delhi, 110028; phone 91-11-579-3211; fax 91-11-579-8876.

Lippincott Williams & Wilkins cannot be held responsible for errors or for any consequences arising from the use of the information contained in this journal. The appearance of advertising in this journal does not constitute an endorsement or approval by Lippincott Williams & Wilkins for the quality or value of the product advertised or of the claims made for it by its manufacturer.

PERMISSION TO PHOTOCOPY ARTICLES: This publication is protected by copyright. Permission to photocopy must be secured in writing from: Permission Dept., Lippincott Williams & Wilkins, 351 West Camden Street, Baltimore, MD 21201, FAX: 410-528-8550; or Copyright Clearance Center (CCC), 222 Rosewood Dr., Danvers, MA 01923; FAX: 508-750-4470; or UMI, Box 49, 300 North Zeeb Road, Ann Arbor, MI 48106-1346; FAX: 313-761-1203.

Article and issue photocopies and 16-mm microfilm, 35-mm microfilm, and 105-mm microfiche are available from UMI, 300 North Zeeb Road, Ann Arbor, MI 48106-1346.

Phase II Trial of Combination Therapy of Tumor Lysate-pulsed Dendritic Cells and Adoptive Transfer of Anti-CD3 Activated T Cells (ATVAC) to Lower Postsurgical Recurrence Rates of Cholangiocellular Carcinoma (CCC)

Koichi Shimizu^{1,2,3}, Nobuhiro Takeshita², Yoshihito Kotera², Kenji Yoshitoshi², Syunichi Ariizumi², Satoshi Katagiri², Yoshihito Otsubo², Keishi Tanigawa^{2,3}, Ken Takasaki^{2,3}, Masakazu Yamamoto², Atsushi Aruga^{2,3}. ¹Chemotherapy Center, Shin-Itabashi Clinic; ²Department of Gastroenterology, Tokyo Women's Medical University (TWMU); ³J. B. Therapeutics Inc, Tokyo, Japan.

Background: Postsurgical recurrence of cholangiocellular carcinoma (CCC) is frequent and fatal. Patients with CCC who underwent curative resection revealed the median overall survival (OS) of 21 months [95% confidence interval (CI), 11.6–30.4]. This phase II study investigated the efficacy and safety of adoptive transfer of anti-CD3 activated T cells (ATVAC) in patients who underwent curative resection for CCC to lower postsurgical recurrence rates.

Methods: Patients with CCC who underwent curative resection received ATVAC. ATVAC consisted of dendritic cells with autologous lymphocytes activated with interleukin-2 and antibody to CD3 at 7-day or 14-day intervals for 3 months. The immune responses to tumor antigens (Tgs) were monitored by delayed-type hypersensitivity (DTH). The primary end point was relapse-free survival. Secondary end points were OS, the monitoring of immune responses to Tgs, and toxicity.

Results: Between September 2000 and August 2005, 38 patients were included, with a median age of 63.2 years (39 to 81), a median tumor size of 5.7 cm. Thirty-eight patients (100%) underwent segmentectomy. On the pathologic findings, vascular invasions, intrahepatic metastases, and lymph node involvements were 81.1%, 29%, and 55.3%, respectively. The median relapse-free survival was 14 months (95% CI, 3–25). The median OS was 26 months (95% CI, 6–46). 20 patients showed positive DTH responses to Tgs. Among these patients, the median OS was 72 months. In contrast, in the group of patients with a negative DTH, the median OS was 13 months (95% CI, 9–17).

Conclusions: This result suggests that ATVAC is very effective in patients with positive DTH responses to Tgs who underwent curative resection for CCC to lower postsurgical recurrence rates.

A Phase I/II Trial of Combination Therapy of Tumor Lysate-pulsed Dendritic Cells and Adoptive Transfer of Anti-CD3 Activated T Cells (ATVAC) in Patients With Advanced Gastrointestinal (GI) Cancers

Koichi Shimizu^{1,2,3}, Keishi Tanigawa^{2,3}, Nobuhiro Takeshita², Toshimi Fujisawa², Ken Takasaki^{2,3}, Masakazu Yamamoto², Atsushi Aruga². ¹Chemotherapy Center, Shin-Itabashi Clinic; ²Department of Gastroenterological Surgery, Tokyo Women's Medical University (TWMU); ³J. B. Therapeutics Inc, Tokyo, Japan.

We have previously shown that tumor lysate-pulsed dendritic cell vaccination (TP-DC) elicited therapeutic rejection of established tumor in animal models. In addition, combination of TP-DC with administration of activated T cells elicited more significant therapeutic rejection of established tumor than the single therapy alone in animal models. We, therefore sought to examine the therapeutic potency of TP-DC with administration of anti-CD3 activated T cells (CAT) against gastrointestinal cancers: 3 patients were diagnosed with pancreatic cancer, 7 patients with HCC, 3 patients with intrahepatic cholangiocarcinoma, 2 patients with esophageal sarcoma, 12 patients with colorectal cancer. Monocyte-derived DCs were generated in serum-free medium containing granulocyte macrophage-colony stimulating factor (100 ng/mL) and interleukin-4 (50 ng/mL). Patients received TP-DC intradermally 4 times every 3 weeks with CAT activated with interleukin-2 and antibody to CD3: 4 patients received 1×10^6 DC, 7 received 2×10^7 , 16 received 1×10^8 . The safety as well as the biologic and the clinical effects of adoptive transfer of anti-CD3 activated T cells (ATVAC) were studied. Twenty-seven patients were included. Ten of these patients had evaluable unresected tumor resistant to conventional chemotherapy. ATVAC was well tolerated; the major adverse events being fever and skin erythema of low grade (grade 1 and grade 2). No grade 3 and 4

adverse events were noted. None of the 10 patients achieved partial remission; 4 patients achieved stable disease. Thirteen of the 16 patients receiving 1×10^8 DC developed a strong positive skin reaction to tumor lysates. In 6 patients, positive skin reaction to tumor lysates was shown to be maintained in 6 months after the development of the positive skin reaction to tumor lysates. The correlation of DTH responses to tumor lysates in vivo with immune responses to lysates in vitro and clinical responses was evaluated. Patients with a positive DTH to tumor lysates revealed the increase in the number of peripheral blood lymphocytes (PBL) compared to those with a negative DTH. The increase in the number of the T cells in PBL was observed in patients with a positive DTH. Furthermore, patients with a positive DTH revealed the significant interferon- γ production by T cells stimulated with TP-DC. The duration of the positive DTH was within 6 months after the final treatment correlated with the decrease in the number of PBL in vivo and the decrease of the production of interferon- γ in vitro by T cells. The results of this phase I trial appear promising for further development in patients with advanced gastrointestinal cancers.

Intratumoral Injection of Immature Dendritic Cells (DCI) Against Gastrointestinal (GI) Cancers: A Phase I Study in Patients With Metastatic GI Cancers

Keishi Tanigawa^{1,2}, Koichi Shimizu^{1,3}, Toshimi Fujisawa¹, Nobuhiro Takeshita¹, Ken Takasaki^{1,2}, Masakazu Yamamoto¹, Atsushi Aruga¹. ¹Department of Surgery, Institute of Gastroenterology, Tokyo Women's Medical University; ²J. B. Therapeutics Inc; ³Chemotherapy Center, Shin-Itabashi Clinic, Tokyo, Japan.

We have previously shown that direct injection of immature dendritic cells (DCI) into tumor nodules could result in significant remission of established subcutaneous tumor. We therefore sought to determine DCI for cancer treatment. Monocyte-derived DCs were generated in serum-free medium containing granulocyte macrophage-colony stimulating factor (100 ng/mL) and interleukin-4 (50 ng/mL). Immature, unpulsed DCs were resuspended in 1 mL of saline. Patients received DCI into tumor nodules 4 times, 14 days apart. In some cases, patients underwent systemic administration of interleukin 2 intravenously at 350,000 IU/body daily for 4 days consecutively after each DCI. The safety as well as the biological and the clinical effects of DCI were evaluated in a phase I clinical trial in patients with metastatic gastrointestinal cancers. Sixteen patients have been included, which had evaluable metastatic or unresected tumor resistant to the conventional chemotherapy/radiotherapy. DCI was well tolerated, the major adverse events being fever were low grade (grade 1 and grade 2) with no grade 3 and 4 adverse events. The number of DCs administered ranged from 1 to 20×10^7 cells originally generated from 4 cycles of leukapheresis products. One of the 16 patients achieved partial remission (6 mo), 12 achieved stable disease. All of these 13 patients developed strong positive skin reaction to keyhole limpet hemocyanin. Considering the late stage and progression of gastrointestinal cancers, the results of this phase I trial are encouraging and promising clinical benefit in patients with chemotherapy/radiation-resistant tumors.

The CD19 Chimeric Antigen Receptor Re-directs CMV Specific T Cells Derived From Central Memory T Cells (Bi-specific T Cells) Against Human Acute Lymphoid Leukemia (ALL)

Xiuli Wang, Winnie Wong, Wen-Chung Chang, Julie R. Ostberg, David DiGiusto, Michael C. Jensen. *Cancer Immunotherapeutics and Tumor Immunology, BRI, City of Hope National Medical Center, Duarte, CA.*

One strategy to enhance the efficacy of antitumor adoptive T-cell therapy is to generate bi-specific T cells, which co-express viral-specific and tumor-specific antigen receptors. The hypothesis is that these bi-specific T cells will have enhanced antitumor function in a patient through the coordinate stimulation by viral antigens that are presented in the context of endogenous professional antigen presenting cells. Central memory T cells (T_{cm}) have a unique ability to self-renew, proliferate, and differentiate into effector T_{em}, which suggests that this T-cell subset will be most effective and persistent upon adoptive transfer.

Thus, we first selected Tcm using the Dreg56 (anti-CD62L) biotinylated antibody and CliniMacs selection. The purified Tcm were then stimulated twice with cytomegalovirus (CMV) pp65 protein, resulting in 40% enrichment of CMV pp65 tetramer+ cells. The CMV-specific T cells were expanded more than 1000-fold following a single restimulation in rapid expansion medium, and then genetically redirected to target CD19 on acute lymphoid leukemia through lentiviral transduction with a CD19-specific chimeric antigen receptor, CD19R. Upon further stimulation and expansion of these T cells, expression of both the CD19R transgene and the endogenous CMV-specific T-cell receptor were stable as detected by flow cytometry and/or Western. Cytotoxicity assays revealed that the bi-specific T cells could efficiently and specifically kill CMV+ targets as well as the acute lymphoid leukemia cell line SupB15. Together, these results suggest that the generation of bi-specific T cells is a feasible strategy with the potential to enhance the overall antitumor potential of adoptively transferred T cells.

Isolating High-affinity T-cell Receptors for Adoptive Therapy of Tumors

Susanne Wilde¹, Bernhard Frankenberger¹, Daniel Sommermeyer², Wolfgang Uckert², Slavoljub Milosevic¹, Stefani Spranger¹, Heike Pohla^{3,4}, Matthias Schiemann⁵, Dirk H. Busch⁵, Dolores J. Schendel^{1,2}. ¹Institute of Molecular Immunology; ²Max-Delbrueck-Center for Molecular Medicine, Berlin, Germany; ³Institute of Molecular Immunology and Clinical Cooperation Group Immune Monitoring, Helmholtz Zentrum München, German Research Center for Environmental Health; ⁴Laboratory of Tumor Immunology, LIFE-Center, Ludwig-Maximilians-University; ⁵Institute of Microbiology, Immunology and Hygiene, Technical University Munich, Munich, Germany.

If one wants to obtain high-avidity T cells specific for tumor-associated antigens (TAA), one has to deal with the problem that such TAA often represent self-peptides derived from overexpressed proteins presented by self-MHC molecules. T cells with high-affinity T-cell receptors (TCR) specific for such ligands have been eliminated through the process of negative selection during lymphocyte development to prevent autoimmunity. Therefore, TCR affinity of remaining lymphocytes for such self-peptides is low. To efficiently generate peptide-specific T cells bearing high-affinity TCR one can tap a nonselected T-cell repertoire when the TAA peptides are presented by allogeneic MHC molecules. Several approaches have been used to obtain such allo-restricted, peptide-specific T-cell clones. We concentrated on dendritic cell (DC) priming and developed a method using RNA-loaded DC as antigen-presenting cells to tap unselected T-cell repertoires. For proof of principle, we compared self-restricted and allo-restricted priming using tyrosinase as a model TAA. Self-restricted, peptide-specific T-cell clones from healthy HLA-A2+ donors were derived using autologous tyrosinase-RNA-pulsed DC whereas allo-restricted T-cell clones from healthy HLA-A2- donors were obtained using autologous DC loaded with RNA encoding tyrosinase and allo-HLA-A2 molecules. We demonstrated that allo-restricted T cells showed functional superiority and higher functional avidities. We extended these findings by generating allo-restricted, high-avidity T cells specific for a Mart-1 peptide and a survivin peptide to show universal application. Since adoptive transfer of TCR-transduced peripheral blood lymphocytes (PBL) provides a new therapeutic treatment our aim was to generate TCR-transgenic PBL using cloned TCR sequences. To this end, we transduced PBL of healthy donors with self-restricted and allo-restricted sequences of tyrosinase-specific T-cell clones with highest functional avidity and best capacity to kill tumors. The allo-restricted TCR-transduced PBL recognized lower peptide concentrations and therefore showed higher functional avidity compared with the self-restricted TCR-transduced PBL, demonstrating the superiority of the allo-restricted TCR.

CANCER STEM CELLS AND THE HOST RESPONSE

Characterization of the Immune Profile of Cancer Stem Cells Isolated From Human Glioblastoma

Cristina Maccalli¹, Stefania Mazzoleni², Samantha Scaramuzza¹, Gloria Sovena¹, Soldano Ferrone³, Rossella Galli², Parmiani Giorgio¹.

¹Oncology, Unit of Immuno-Biotherapy of Solid Tumors; ²Stem Cell Research Institute, San Raffaele Foundation Scientific Institute, Milan, Italy; ³Hillman Cancer Center, University of Pittsburgh Cancer Institute, Pittsburgh, PA.

Cancer Stem cells (CSCs) represent the most aggressive component of tumors and have been proposed as elective cellular target in the context of biological therapies such as immunotherapy. The main objectives of our project are represented by the identification of markers with immunological relevance expressed by CSCs and the validation of their role as target molecule to design immunotherapeutic protocols for glioblastoma (GBM).

We carried out a set of experiments using IF and cytofluorimetric or confocal microscopy analysis aimed at the immunological characterization of CSCs isolated from human GBM and in vitro cultured either in the presence or absence of mitogens. We found that GBM CSCs were negative or weakly positive for the expression of MHC class I or class II molecules, with only 1 out of 8 GBM CSC lines expressing high level of HLA molecules. Along this line, NKG2D ligands (MICA/B or ULBPs) were weakly or not expressed by most GBM CSCs with only 1 cell line being positive for all these molecules while significant expression of these molecules was detected on GBM tumor cell lines [grown in vitro under standard culture conditions (FBS)]. Moreover, defective expression of MHC antigen processing machinery (APM) by GBM CSC lines was observed. Up-regulation of MHC class I and of most of APM molecules was achieved after interferon (IFN)- γ treatment of CSCs, while weak or no modulation of MHC class II molecules was observed. Heterogeneous expression of MHC molecules or NKG2D ligands was also observed in tumors generated by intracranial or subcutaneous transplantation of GBM CSCs in immunodeficient mice. Notably, cancer-testis TAAs, such as NY-ESO or MAGE was weakly or not expressed by GBM CSC lines while survivin and COA-1 were detected in all these cell lines (N = 8). We carried out in vitro stimulation of peripheral blood mononuclear cells isolated from 2 GBM patients with autologous CSCs and the specific reactivity of T lymphocytes against GBM CSCs was evaluated by IFN- γ release (enzyme-linked immunosorbent spot) or cytotoxic activity (CD107a mobilization). We found that GBM CSCs, following IFN- γ treatment, can elicit an efficient CSC-specific T-cell-mediated immune response.

Taken together, these results indicate that MHC molecules and NKG2D ligands are expressed heterogeneously by both in vitro established CSC lines and in tumors transplanted in immunodeficient mice. In addition, though the expression of APM is defective in these cells, we found that GBM CSCs can be exploited to generate T-cell-mediated immune responses in at least some GBM patients.

Upregulation of Stem Cell-related Genes in Hypoxic Mammosphere Cultures

Norazizah Shafee¹, Shu-Yuan Liao², Eric J. Stanbridge². ¹Department of Microbiology, Faculty of Biotechnology and Biomolecular Sciences, Universiti Putra Malaysia, Serdang, Malaysia; ²Department of Microbiology and Molecular Genetics, University of California, Irvine, CA.

Nonadherent mammosphere cultures have been used as a method for expansion and maintenance of mammary gland stem cells in vitro. We have observed that mammospheres cultured in hypoxic condition survived better and could be maintained at higher passage numbers compared to normoxic conditions. We sought to examine the possible involvement of stem cell regulatory genes in the maintenance of these mammospheres under hypoxic conditions. We dissociated cells from normal as well as breast cancer samples, and cultured them in suspension conditions either under normoxia or hypoxia (0.5% O₂). At 20,000 cells/ml concentration, only 6 out of 8 samples tested formed mammospheres after 7 to 10 days of culture. The number of these primary mammospheres varies from sample to sample. There was no difference in the numbers when cells from the same sample were incubated under hypoxic or normoxic conditions. Following formation of the primary mammospheres, we dissociated and subcultured them at similar cell concentrations. These mammospheres survived variable passage numbers, ranging from 2 to 10 passages. Mammospheres from sample number 9 showed the highest passage number. To investigate the level of stem cells

Abstract Author Index

A

Abe, Fuminori, 967
 Aboussekhra, Abdelilah, 963
 Ahn, Yong-Oon, 961
 Aichele, Peter, 953
 Aikawa, Elena, 931
 Akporiaye, Emmanuel, 937
 Al-Tweigeri, Taher, 963
 Alber, Sean, 933, 965
 Alderson, Kory, 934, 957
 Allison, James, 934
 Amin, Asim, 933
 Amoscato, Andrew, 965
 Ancarani, Valentina, 935
 Andersen, Mads, 940, 943, 950
 Andrade Filho, Pedro, 940
 Andrea, Beatty, 935
 Apostolou, Irina, 956
 Arbour, Nathalie, 963
 Ariizumi, Syunichi, 926
 Armant, Myriam, 921
 Arthur, Cora, 952
 Aruga, Atsushi, 926
 Ascarateil, Stephane, 939
 Asemissen, Anne Marie, 943
 Assi, Hazem, 933
 Atkins, Michael, 931, 958
 Awasthi, Sanjay, 931
 Awasthi, Yogesh, 931

B

Bach, Patricia, 953
 Back, Tim, 934
 Badie, Behnam, 921
 Bæk Sørensen, Rikke, 940
 Baeuerle, Patrick, 971
 Baier, Gottfried, 941
 Balint, Klara, 963
 Banat, Gamal, 961
 Baoying, Fang, 928, 929
 Barchetti, Andrea, 963
 Barhoush, Eman, 963
 Bartlett, David, 942, 946
 Baseler, Michael, 938
 Baskar, Sivasubramanian, 969
 Bassie, Rahmatu, 924
 Bauer, Sandra, 943
 Baur, Andrea, 948
 Beatty, Andrea, 935, 948
 Bechmann, Christian, 951
 Becker, Jürgen, 940
 Becker, Maria, 954
 Belisle, Jennifer, 964
 Berezovskaya, Alla, 921
 Berglin, Jon, 948
 Bergmann, Christoph, 921
 Berk, Errik, 942
 Berman, David, 933
 Besselsen, David, 937
 Best, J, 960
 Bhasin, Manoj, 958
 Bhatia, Shailender, 928
 Black, Keith, 928

Blankenstein, Thomas, 948
 Blohm, Ulrike, 953
 Blois, Joe, 931
 Boasberg, P, 970
 Bocchetta, Maurizio, 932, 962
 Bondarenko, Igor, 937
 Bonhoure, Fabien, 939
 Bot, Adrian, 950
 Bouchlaka, Myriam, 934, 939, 957
 Boyiadzis, Michael, 961
 Bradley-Dunlop, Deborah, 937
 Brandl, Anja, 971
 Brandl, Christian, 971
 Bray, Sarah, 939
 Brian, Suzane, 938
 Brichard, Vincent, 944
 Brill, Thomas, 947
 Brown, Christine, 921
 Bruns, Kristina, 959
 Brusa, Davide, 945
 Buchner, Alexander, 947, 948
 Buhtoiarov, Ilia, 954
 Bui, Jack, 952
 Buller, Mark, 954
 Buonaguro, Franco, 953
 Buonaguro, Luigi, 953
 Burgdorf, Stefan, 951
 Burjanadze, Maka, 930
 Busch, Dirk, 927
 Bushnell, Kathryn, 924
 Butler, Marcus, 921
 Butterfield, Lisa, 939, 942, 946
 Byrd, John, 969

C

Calderhead, David, 936
 Campos-Vallete, Marcelo, 954
 Cannon, Martin, 940
 Cantley, Lewis, 931
 Carbone, Michele, 932, 962
 Carbonell, Denysa, 935, 948
 Cardenas, Elisa, 924
 Carrillo, Mayra, 950
 Carroll, Kyla, 950
 Carson, William, 929, 971
 Castro, Miguel, 944
 Chang, Ken, 955
 Chang, Wen-Chung, 923, 926
 Chapman, Robert, 945
 Cheang, Ellen, 945, 948
 Chen, Hong, 960
 Chen, Huiming, 940
 Chen, Janet, 966
 Chen, Nanhai, 954
 Chen, Xiaochuan, 955
 Chester, John, 952
 Cheung, H Kam, 937
 Chiarion-Sileni, Vanna, 937, 944
 Chiorino, Giovanna, 945
 Chodon, Thimle, 922
 Choi, Hye Kyoung, 958

Chong, Han Toh, 951
 Chu, N, 936
 Chu, Ray, 938
 Claesson, Mogens, 951
 Clay, Timothy, 945
 Coche, Thierry, 944
 Coffey, Matt, 951
 Comin-Anduix, Begonya, 922
 Comins, Charlie, 951
 Connor, Joseph, 964, 970
 Cornforth, Andrew, 922, 935
 Coukos, George, 963
 Curry, Dyan, 948
 Curti, Brendan, 928
 Czystowska, Malgorzata, 957, 958, 960, 961

D

Dafferner, Alicia, 967
 Dal Pozzo, Katie, 945, 948
 Daley, Heather, 921
 Davis, Thomas, 945
 De Bono, Johann, 952
 De Ioannes, Alfredo, 954
 De Ioannes, Pablo, 954
 De Pril, Veerle, 937
 DeBenedette, Mark, 936
 Del Campo, Miguel, 954
 Delcayre, Alain, 945, 948
 DePriest, Carol, 922
 DeRaffele, Gail, 965
 Derhovanessian, Evelyn, 962
 Dermime, Said, 963
 Dhungel, Kalpana, 952
 DiGiusto, David, 926
 Dillman, Robert, 922, 935, 948
 Dodds, Michael, 928
 Dogra, Ritika, 940
 Dongmei, He, 928, 929
 Donkor, Moses, 967
 Donze, Olivier, 930
 Doty, Daniel, 956
 Drury, Linda, 921
 Dréno, Brigitte, 944
 Duma, Christopher, 922
 Dumitrascu, Rio, 961

E

Eckert, Helmut, 944
 Edington, Howard, 942
 Eggermont, Alexander, 944
 Egilmez, Nejat, 964
 Eisele, Bernd, 947
 Ellis, Robin, 922
 Ellson, Christopher, 931
 Engleman, Edgar, 949
 Enstrom, Amanda, 944
 Epstein, Alan, 933
 Ernstoff, Marc, 931, 956, 958
 Esuvaranathan, Kesavan, 931, 966

Etto, Tamara, 923
 Eubank, Tim, 934
 Evrensel, Cahit, 939

F

Facciabene, Andrea, 963
 Fahmy, Tarek, 949
 Fairchild, Robert, 963
 Faló, Jr, Louis, 966
 Falus, Andras, 930
 Fanyan, Zou, 928
 Felder, Mildred, 964, 970
 Feltquate, D, 956
 Fend, Falko, 947
 Ferreira, Jorge, 954
 Ferris, Robert, 940, 957, 970
 Ferrone, Soldano, 927
 Fiammenghi, Laura, 935
 Figueiredo, Jose-Luiz, 931
 Filippou, Pauline, 960
 Flavell, Richard, 949
 Flavin, Marisa, 921
 Floyd, Kevin, 924
 Foon, Kenneth, 961
 Forget, Marie-Andrée, 963
 Forman, Daron, 956
 Fowler, Abner, 935, 948
 Fox, Bernard, 924
 Francisco, Marites, 938
 Frankenberger, Bernhard, 927, 932, 948, 967
 Franzoso, Guido, 932
 Friedlander, Philip, 921
 Fuchs, Alan, 939
 Fujisawa, Toshimi, 926
 Fujisawa, Toshio, 941
 Fulbright, Orential, 924

G

Gajewski, Thomas, 937, 968, 969
 Gallardo, Humildad, 934
 Galli, Rossella, 927
 Gallo, Robert, 953
 Gamble, Alicia, 936
 Gannon, Philippe, 963
 Gansbacher, Bernd, 947
 Garetto, Stefano, 945
 Gargano, Michele, 955, 956
 Gaulis, Swann, 944
 Gerloni, Mara, 948
 Ghebeh, Hazem, 963
 Ghiasi, Somayeh, 937
 Gillies, Stephen, 971
 Ginestier, C, 928
 Gnjatich, Sacha, 934
 Godin-Ethier, Jessica, 963
 Goldberg, S, 956
 Goldenberg, David, 955
 Goldrath, Ananda, 960
 Gonzalez, Marissa, 924
 Gooding, William, 957, 970

Gorbachev, Anton, 963
 Gordon, Michael, 928
 Gore, Martin, 952
 Gorelik, Elieser, 958
 Granato, Anna Maria, 935
 Gray, Andrew, 941
 Gregory, Melissa, 938
 Grimminger, Friedrich, 961
 Groiss, Franz, 944
 Gruber, Thomas, 941
 Gruenau, Sabine, 941
 Gruselle, Olivier, 944
 Gu, Tao, 964
 Gubbels, Jennifer A, 964, 970
 Guenterberg, Kristan, 929
 Guild, Justin, 956
 Gulati, Reema, 956
 Guragain, Sita, 952

H

Haddad, Philip, 929
 Hadrup, Sine, 940
 Hahn, Tobias, 937
 Hall, Geoff, 952
 Halstenson, Charles, 955, 956
 Hamid, Omid, 933, 970
 Han, Tae Hee, 935
 Hanafi, Laïla-Aïcha, 963
 Hank, Jackie, 970
 Hansen, Michael, 947
 Harding, Thomas, 937
 Harrington, Kevin, 951, 952
 Hartung, Rudolf, 947
 He, Xianghui, 958
 Healey, Don, 936
 Hedley, Mary Lynne, 945
 Heinemann, Lucy, 951
 Heo, Dae Seog, 961
 Hernandez, Claudia, 931, 966
 Hernandez, Jessica, 923
 Hilldorfer, Benedict, 958, 961
 Hinz, Thomas, 953
 Hirano, Naoto, 921
 Hodi, F Stephen, 921, 956
 Höfler, Heinz, 967
 Hofstetter, Alfons, 948
 Hoji, Aki, 928
 Hoke, Traci, 967
 Holden, Helen, 964, 970
 Hoos, Axel, 937
 Horvatinovich, Joe, 936
 Hou, Linan, 958
 Houede, N, 956
 Hu, B, 956
 Huan-Tu, Guang, 937
 Huang, S, 956
 Huard, Bertrand, 930
 Humphrey, Rachel, 937
 Hunder, Naomi, 928
 Hurwitz, Arthur, 925, 968
 Husain, Syed, 941
 Hwu, Patrick, 923, 924, 970
 Hwu, W, 970

I

Ibrahim, Ramy, 937
 Imataki, Osamu, 921
 In, Kwang Ho, 958

J

Jackson, Edwin, 958
 Jarjoura, David, 971
 Jensen, Michael, 921, 922, 923, 924, 926
 Jin, Ping, 935
 Johnson, Erik, 954, 971
 Johnson, Jonas, 957
 Jones, L, 936
 Jones, Natalie, 971
 Jonnalagadda, Mahesh, 923
 Jooss, Karin, 937
 Joseph, Marie, 958
 Josephson, Lee, 931
 Joshi, Bharat, 940, 941
 Jungbluth, Achim, 968

K

Kalinke, Ulrich, 953
 Kalinski, Pawel, 942, 946
 Kamat, Ashish, 960
 Kang, Kyung Ho, 958
 Kao, Grace, 921
 Karami, Ali, 943
 Karapanagiotou, Eleni, 952
 Karkada, Mohan, 942
 Kasperbauer, Jan, 940
 Kast, W Martin, 941
 Katagiri, Satoshi, 926
 Kaufman, Howard, 960, 965
 Kawakami, Yutaka, 964
 Keilholz, Ulrich, 943
 Keler, Tibor, 945
 Ketteringham, Helen, 936
 Khatami, Fatemeh, 937, 943
 Khazaie, Khashayarsha, 930
 Kilinc, Mehmet, 964
 Kim, Dae Won, 960, 965
 Kim, Dae-Yeon, 965
 Kim, Je Hyeong, 958
 Kim, Jin, 966
 Kim, Jong-Hyeok, 965
 Kim, K, 970
 Kim, Yong-Man, 965
 Kim, Young-Tak, 965
 Kim-Schulze, Seunghye, 960, 965
 Kirkwood, John, 933, 942, 956
 Kline, Justin, 969
 Kluger, H, 970
 Knutson, Jay, R, 935
 Kollgaard, Tania, 940, 950
 Komita, Hideo, 965
 Kondadasula, Sri Vidya, 971
 Kopp, Joachim, 948
 Koprivnikar, Kathryn, 937
 Korkaya, H, 928
 Kos, Ferdynand, 968
 Kotera, Yoshihito, 926
 Kottke, Tim, 951
 Koya, Richard, 922
 Kozak, Kellie, 940
 Kruit, Wim, 944
 Kübler, Hubert, 947
 Kudo-Saito, Chie, 964
 Kumaraguru, Uday, 953
 Kurman, Michael, 955, 956
 Kvistborg, Pia, 951

L

Lam, Kit, 944
 Lametschwandtner, Guenther, 943
 Lang, L, 956
 Lang, Stephan, 921, 958
 Langheinrich, Alexander, 961
 Lapointe, Rêjean, 963
 Larsen, Stine, 943
 Lauren, Virtuoso, 964
 Laus, Reiner, 945, 948
 Laysa, Fernando, 948
 Lee, Gregory, 935
 Lee, Ha-Young, 965
 Lee, Kyoung Ju, 958
 Lee, Robert, 971
 Lee, Sang Yeub, 958
 Lee, Shin Wha, 965
 Lee, Steve, 970
 Lee, Sung Yong, 958
 Lee, Wen Chong, 937
 Legal, Frederique-Anne, 930
 Lehe, Cynthia, 963
 Lehmann, Frederic, 944
 Lesinski, Greg, 929
 Letsch, Anne, 943
 Lewis, George, 953
 Lhomme, C, 956
 Li, Hao, 934
 Li, Hong, 971
 Li, Weidong, 958
 Li, Yufeng, 923
 Liakou, Chrysoula, 960
 Liao, Shu-Yuan, 927
 Libermann, Towia, 958
 Lieberman, Frank, 946
 Liles, Darla, 959
 Lind, Nicholas, 960
 Ling, Leona, 937
 Liu, Gentao, 928
 Liu, Hui, 930, 954
 Liu, L, 928
 Liu, Shujuan, 923
 Liu, Zuqiang, 966
 Lizee, Gregory, 923
 Lizhen, He, 945
 Lloyd, Ricardo, 940
 Logan, T, 956
 Logothetis, Christopher, 960
 Loibner, Hans, 941, 944
 Lopez-Albaitero, Andres, 940, 970
 Lotze, Michael, 932
 Louahed, Jamila, 944
 Lu, Yanhui, 971
 Luby, Thomas, 945
 Lui, Hui, 930, 954
 Lundgren, Lotta, 937
 Luptawan, Anne, 938

M

Maccalli, Cristina, 927
 Maciag, Paulo, 950
 Mahadevan, Daruka, 937
 Mahendran, Ratha, 931, 966
 Mahvi, David, 971
 Maida, Anthony, 944
 Maio, Michele, 937
 Malbon, Michelle, 924

Malyguine, Anatoli, 925, 938
 Mamelak, Adam, 938
 Mandapathil, Magis, 921, 958, 960, 961
 Mandic, Maja, 957
 Mandl, Stefanie, 945, 948
 Mani, Aruna, 971
 Mansour, Marc, 942
 Manubens, Augusto, 954
 Manukian, Gregor, 934
 Margolin, K, 956
 Marincola, Francesco, 930, 935, 953, 954, 960
 Marino, Joseph, 936
 Marsh, Clay, 966
 Martinez, Catalina, 921
 Mascarenas, Mary, 948
 Matera, Lina, 945
 Matijevic, Mark, 945
 Matthes, Thomas, 930
 Mazer, Mia, 928, 938
 Mazzatti, Dawn, 962
 Mazzoleni, Stefania, 927
 McDermott, David, 956, 958
 McGhee, Patrick, 960
 McKee, Thomas, 930
 McRorie, William, 935
 Medioni, J, 956
 Mehta, Devangi, 956
 Meisenburg, Brenna, 950
 Melcher, Alan, 951, 952
 Mellemgaard, Anders, 951
 Mendelson, David, 928
 Migliore, Elisa, 945
 Migneault, Martine, 964
 Mikhailov, Sergey, 937
 Miller, Priscilla, 924
 Miller, William, 924
 Milosevic, Slavoljub, 927
 Minor, David, 933
 Mohebbi, Reza, 937
 Moldren, Jeffrey J, 923
 Molledo, Bruno, 954
 Monaco, Alessandro, 930, 953, 954
 Montazer Haghighi, Mahdi, 937
 Mooney, Mary, 921
 Moroziewicz, Dorota, 965
 Morris, John, 949
 Morris, Nick, 924
 Morse, Michael, 945
 Mortier, Laurent, 944
 Moudgil, Tarsem, 924
 Mukherji, D, 951
 Murphy, William, 934, 939, 957
 Murray, Andrew, 921
 Muthuswamy, Ravikumar, 942

N

Nachtwey, James, 945, 948
 Nadler, Lee, 921
 Nakajima, Atsushi, 941
 Nam, Joo-Hyun, 965
 Nandakumar, Subhadra, 953
 Nasu, Masaki, 932
 Neal, Zane, 970
 Nemat Malek, Fatemeh, 937
 Neyroz, Paolo, 935
 Ng Tang, Derek, 960

Nguyen, Minh, 937
 Nicodemus, C, 946
 Nicolette, Charles, 936
 Ningsun, Yang, 942
 Noh, Hae, 966
 Nova, Esteban, 954
 Nutting, Christopher, 952

O

O'Brien, Timothy, 940
 O'Day, Steven, 937
 Oberneder, Ralph, 948
 Ochoa, Augusto, 931, 966
 Okada, Hideho, 946
 Old, Lloyd, 934
 Ostberg, Julie, 926
 Osthoff, Michael, 947
 Otsubo, Yoshihito, 926
 Oza, A, 956

P

Pancisi, Elena, 935
 Pandha, Hardev, 951, 952
 Panelli, Monica, 933, 960
 Pannuti, Antonio, 948, 962
 Papadopoulos, N, 970
 Pardee, Angela, 933
 Park, Jun Eun, 939
 Parmiani, Giorgio, 927, 947
 Parra-Lopez, Carlos, 936
 Pass, Harvey, 932
 Patankar, Manish, 964, 970
 Patchen, Myra, 955, 956
 Paterson, Yvonne, 950
 Patkar, Seema, 948
 Patterson, John, 968
 Patti-Diaz, L, 956
 Paul, Roger, 947
 Pavelko, Kevin, 947
 Pavlick, A, 970
 Pawelec, Graham, 962
 Pease, Larry, 947, 959
 Peddareddigari, Vijay, 924
 Pedersen, Ayako, 951
 Pehamberger, Hubert, 937
 Pelletier, Sandy, 963
 Peng, Shiwen, 968
 Peng, Xiahoui, 963
 Petrie, Sarah, 964
 Petrini, Massimiliano, 935
 Pezzutto, Antonio, 948, 962
 Philip, Ramila, 942
 Phuphanich, Surasek, 938
 Pircher, Hanspeter, 953
 Platero, J, 956
 Poehlein, Christian, 924
 Pohla, Heike, 927, 947
 Pollack, Ian, 946
 Ponath, Paul, 956
 Ponte, Joe, 956
 Pos, Zoltan, 930, 953, 954
 Powderly, John, 945
 Powel, Sarah, 934
 Prosser, Megan, 924
 Protheroe, Andrew, 951
 Pujade-Lauraine, E, 956
 Pullamsetti, Soni, 961

Puri, Raj, 940, 941
 Puri, Sachin, 924
 Purton, Jared, 960

Q

Qiu, Yujie, 958
 Quach, Angeline, 950
 Quan, Francine, 959
 Quan, Jr, Walter, 959
 Queirolo, Paola, 937
 Quinn, David, 928

R

Rader, Christoph, 969
 Radhakrishnan, Suresh, 959
 Radvanyi, Laszlo, 923
 Rahmat, Juwita, 931
 Raig, Ene, 929
 Rakhmilevich, Alexander, 954
 Ramakrishna, Venky, 945
 Ramanathapuram, Lalitha, 937
 Ramesh, Radha, 945
 Ramlogan, Charmaine, 949
 Rancourt, Claudine, 964
 Rasalan, Teresa, 934
 Rastgoo, Nasrin, 943
 Rau, Wigbert, 961
 Raulet, David, 954
 Rausch, Matthew, 937
 Redelman, Doug, 934, 957
 Ren, Jiaqiang, 935
 Ren, Jin, 958
 Restifo, Nicholas, 925
 Ribas, Antoni, 922
 Riccobon, Angela, 935
 Riddell, Stanley, 921
 Ridolfi, Laura, 935
 Ridolfi, Ruggero, 933, 935
 Ritter, Erika, 934
 Ritter, Gerd, 934
 Rivera, Sandra, 950
 Roda, Julie, 966, 971
 Rodriquez, Paulo, 931
 Rodriguez-Cruz, Tania, 923
 Roederstein, Susanne, 953
 Rolland, F, 956
 Roman, Laslo, 937
 Ron, Ilan, 933
 Rosales, Tilman, 935
 Rosenheim, Sidney, 924
 Rosenzweig, Michael, 956
 Rosette, Caridad, 948
 Rossi, John, 924
 Rountree, Ryan, 945, 948
 Rubinstein, Mark, 960
 Rudnick, Jeremy, 938
 Rüttinger, Dominik, 971

S

Sabatino, Marianna, 930, 953, 954, 960
 Sacks, Natalie, 937
 Salazar, Andres, 946
 Sammat, Leelahdar, 942

Sander, C, 933
 Sanders, D, 970
 Savage, Philip, 938
 Savai, Rajkumar, 961
 Scaramuzza, Samantha, 927
 Scatolini, Maria, 945
 Scheibenbogen, Carmen, 943
 Schendel, Dolores, 927, 932, 947, 948, 967
 Schermuly, Ralph, 931, 961
 Schiemann, Matthias, 927
 Schiltz, Patric, 922
 Schmid, Markus, 967
 Scholnicoff, Ellen, 967
 Schreiber, Robert, 952
 Schultes, B, 946
 Schumacher, Ton, 940
 Schuster, Manfred, 941
 Seeger, Werner, 961
 Selli, Silvia, 930
 Selvan, Senthamil, 935, 948
 Seow, Shih Wee, 966
 Seremet, Tina, 950
 Serrano, Natalia, 938
 Shafee, Norazizah, 927
 Shafer-Weaver, Kimberly, 925, 938, 968
 Shah, A, 956
 Shahabi, Vafa, 950
 Sharma, Padmancee, 960
 Sharp, Shari, 922
 Sheikh, N, 936
 Shi, Jian, 939
 Shim, Jae Jeong, 958
 Shimamura, Takeshi, 941
 Shimizu, Koichi, 926
 Shin, Chol, 958
 Shrestha, Ram, 952
 Sick, Rikke, 940, 950
 Siegel, Jonathan, 933, 934
 Sierra, Rosa, 931
 Signoretti, Sabina, 958
 Simantov, R, 970
 Simmich, Christiane, 971
 Singh, Manish, 938
 Singhal, Jyotsana, 931
 Singhal, Sharad, 931
 Sinnathamby, G, 942
 Slavonic, Michael, 956
 Slezak, Stefanie, 935
 Small, Eric, 927, 937
 Smith, Ralph, 931
 Sommermeyer, Daniel, 927
 Sondel, Paul, 954
 Sovena, Gloria, 927
 Spicer, James, 951
 Spivey, Tara, 930
 Spranger, Stefani, 927
 Stanbridge, Eric J, 927
 Starr, Renate, 921
 Stather, David, 943
 Steel, Jason, 949
 Steenblock, Erin, 949
 Steigerwald, Robin, 945
 Stief, Christian, 948
 Stoelben, Erich, 944
 Stoiber, Wolfgang, 944
 Storkus, Walter, 933, 957, 965, 967
 Straten, Per, thor, 940, 943, 950
 Strauss, Laura, 921
 Strobl, Susan, 938

Stroncek, David, 935, 953, 960
 Subleski, Jeff, 934
 Sukhumalchandra, Pariya, 923
 Sumimoto, Hidetoshi, 964
 Sun, Jingjing, 960
 Sung, Myung Whum, 961
 Surh, Charles, 960
 Svane, Inge Marie, 940, 950
 Szajnik, Marta, 960, 961
 Szalay, Aladar, 954
 Szczepanski, Miroslaw, 957, 958, 960, 961
 Sznol, M, 956, 970

T

Taback, Bret, 965
 Takasaki, Ken, 926
 Takeshita, Nobuhiro, 926
 Talmadge, James, 967
 Tam, Victor, 950
 Tanaka, Makito, 921
 Tanguay, Simon, 963
 Tanigawa, Keishi, 926
 Tarhini, Ahmad, 933
 Tate, David, 968
 Taylor, Jennifer, 957
 Tcherepanova, Irina, 936
 Terzulli, Stephanie, 934
 Testa, Joseph, 962
 Tham, Sin Mun, 966
 Theoharis, Nathaniel, 955, 956
 Thiel, Eckhard, 943
 Thoburn, Christopher, 968
 Thompson, Brad, 951
 Thompson, James, 924
 Thompson, John, 928, 933
 Tillman, Sarah, 935
 Tornesello, Maria Lina, 953
 Tovar Murillo, Diana, 936
 Traupe, Horst, 961
 Trimble, Cornelia, 968
 Troncoso, Patricia, 960
 Tse, Jason, 939
 Tseng, William, 949
 Tsuchihashi, Z, 956
 Tsukamoto, Nobuo, 964
 Tumeh, Paul, 922

U

Uckert, Wolfgang, 927
 Ueda, Ryo, 946
 Uppaluri, Ravindra, 952
 Urba, Walter, 924

V

Vaickus, Lou, 956
 Van Randenborgh, Heiner, 947
 Vermi, William, 952
 Verschraegen, Claire, 937
 Vile, Richard, 951
 Vindelov, Lars, 950
 Vitale, Laura, 945
 Völker-Call, Marcel, 943
 von Euw, Erika, 922
 Vonderhaar, Derek, 968

Vujanovic, Lazar, 939
 Vujanovic, Nikola, 939

W

Wagner, Bettina, 941
 Waisbren, Julie, 954
 Waldmann, Thomas, 949
 Walker, Edwin, 924
 Walker, Paul, 959
 Wallecha, Anu, 950
 Walsh, Richard, 955, 956
 Wang, Ena, 930, 954, 960
 Wang, Hong, 938
 Wang, L, 946
 Wang, Xiuli, 926
 Watchmaker, Payal, 942
 Watkins, Simon, 933, 939
 Watkins, Stephanie, 925
 Weber, Jeffrey, 933
 Weinberg, Andy, 924
 Weinert, Brian, 951
 Weir, Genevieve, 942

Weirich, Gregor, 967
 Weiss, Jonathan, 934
 Weissleder, Ralph, 931
 Welniak, Lisbeth, 934 939, 957
 Welsh, Ann, 961
 Wenandy, Lynn, 950
 Wesa, Amy, 933, 957, 965, 967
 Westphal, Sherry, 967
 Wheeler, Christopher, 938
 White, J Michael, 952
 Whiteside, Theresa, 921, 942, 946, 957, 958, 960, 961
 Wicha, Max, 928
 Wilde, Susanne, 927
 Wilkins, Danice, 934, 957
 Wilttrout, Robert, 934
 Wojtaszek, C, 956
 Wolchok, Jedd, 934, 937
 Wolf, Andreas, 971
 Won Kim, Dae, 960, 965
 Wong, Raymond, 950
 Wong, Winnie, 926
 Woolard, Stacie, 953

Worschech, Andrea, 930, 954
 Wrzesinski, Stephen, 949
 Wu, D, 956

X

Xu, Minlin, 928
 Xu, Yinyan, 934

Y

Yadav, Sushma, 931
 Yaguchi, Tomonori, 964
 Yamamoto, Masakazu 926,
 Yamane, Brett, 971
 Yang, Haining, 932
 Yang, Jiahui, 969
 Ye, Jianhua, 944
 Yoo, Se Hwa, 958
 Yoshitoshi, Kenji, 926
 You, Zhaoyang,
 Yu, John, 928, 938
 Yu, Ping, 949

Yu, Yong, 954
 Yuan, Hushan, 931
 Yuan, Jianda, 934

Z

Zabaleta, Jovanny, 931
 Zali, Mohammad, 937, 943
 Zaritskaya, Luibov, 938
 Zea, Arnold, 968
 Zha, Yuanyuan, 968
 Zhang, Chen, 966
 Zhang, Lei, 962
 Zhang, Long, 969
 Zhang, Qian, 954
 Zhang, Xiamei, 937
 Zhang, Xiaoli, 971
 Zhao, Na, 958
 Zhu, Liwei, 958
 Zimmerer, Jason, 929
 Zimmermann, Kaja, 943
 Zocca, Mai-Britt, 951