

Second Meeting of
**THE SOCIETY
OF NATURAL IMMUNITY**

Taormina (Italy) May 25-28, 1994

**The NK cell
and its interaction
with immune
and non-immune
cells**

Final Program

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immune and non-immune cells**

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ORGANIZING COMMITTEE

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Invited Speakers and Chairpersons

Christine A. Biron, PhD
Providence, RI, USA
Benjamin Bonavida, PhD
Los Angeles, CA, USA
Ricardo Gazzinelli, PhD
Bethesda, MD, USA
Ronald B. Herberman, MD
Pittsburgh, PA, USA
Klas Karre, MD, PhD
Stockholm, Sweden
Vinay Kumar, MD
Dallas, TX, USA
Lewis L. Lanier, PhD
Palo Alto, CA, USA
Paul J. Leibson, MD, PhD
Rochester, MN, USA
Miguel Lopez-Botet, MD
Madrid, Spain
Alberto Mantovani, MD
Milan, Italy
Lorenzo Moretta, MD, PhD
Genoa, Italy
John R. Ortaldo, PhD
Frederick, MD, USA
John J. O'Shea, MD
Frederick, MD, USA

Bice Perussia, MD
Philadelphia, PA, USA
Eckhard R. Podack, MD, PhD
Miami, FL, USA
Michael J. Robertson, MD
Boston, MA, USA
William E. Seaman, MD
San Francisco, CA, USA
Jack L. Strominger, MD
Cambridge, MA, USA
Tuomo Timonen, MD
Helsinki, Finland
Giorgio Trinchieri, MD
Philadelphia, PA, USA
Raymond M. Welsh, PhD
Worcester, MA, USA
Theresa L. Whiteside, PhD
Pittsburgh, PA, USA
Wayne M. Yokoyama, MD
New York City, NY, USA

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S.I.A.L. S.R.L.
Valigi, Perugia
CNR - "Altri interventi"

GENERAL INFORMATION

Registration

The conference secretariat will be available at the Hotel Caparena for registration, reimbursements and information during the following hours:

Wednesday, May 25
10:00 a.m. - 12:30 p.m.
3:30 p.m. - 7:30 p.m.

Thursday, May 26
8:00 a.m. - 1:00 p.m.
4:00 p.m. - 6:30 p.m.

Friday, May 27
8:00 a.m. - 12:30 p.m.
2:00 p.m. - 5:30 p.m.

Saturday, May 28
8:00 a.m. - 12:30 p.m.

Accompanying persons

Registration for accompanying persons will also be held at the Hotel Caparena during the hours listed above. The £. 300.000 fee includes participation in the following activities:

Wednesday, May 25
7:30 p.m. Welcoming Cocktail Party

Thursday, May 26
1:00 p.m. Lunch
8:30 p.m. Folk dinner

Friday, May 27
12:30 Lunch
6:00 p.m. Walking tour of Taormina;
visit to the Greek Theatre
9:00 p.m. Gala dinner

Saturday, May 28
12:30 p.m. Lunch

Posters

Posters will be on display throughout the Workshop. Participants are kindly asked to set-up their posters at the Hotel Caparena on Wednesday, May 25 between 3:00 p.m. and 7:00 p.m. Posters included in one of the morning sessions will be in Room E. Those included in an afternoon session will be in Room D. Posters should be removed following lunch on Saturday, May 28.

Transportation

From Wednesday, May 25 to Saturday, May 28, a free shuttle bus will be available to transport guests to and from the conference site for both scientific and social programs. Those guests staying at the Hotel Caparena, Bay Palace Hotel and Hotel Isolabella are invited to use this service. This shuttle bus is also available to transport guests to a lift which can be taken to reach the center of Taormina.

Please inform the conference secretariat at the Hotel Caparena of the day and time of your departure so that we may coordinate transportation to the airport. This service will be offered Saturday, May 28 and Sunday, May 29.

Wednesday, May 25

7:30 p.m. Welcoming cocktail party

Thursday, May 26

SCIENTIFIC PROGRAM

8:00 a.m. - 8:45 a.m. Poster viewing: Sessions I and IIa

8:45 a.m. - 9:00 a.m. Opening remarks
In memoriam: Dr. Eva Lotzová

Session I: "Ontogeny and tissue distribution"

Chairpersons: Vinay Kumar (USA), Carlo Riccardi (Italy)

9:00 a.m. - 10:30 a.m. V. KUMAR (USA) - "NK cell differentiation: from pluripotent stem cells to committed precursor cells"

D. V. DELFINO, K. D. PATRENE, R. B. HERBERMAN, S. S. BOGGS (USA) - "Characterization of a CD44 population of mouse bone marrow cells containing NK precursors"

M. J. GUIMOND, L. MASON, P. PIOTROWSKI, B.A. CROY (Canada, USA) - "LGL-1+ cells during murine pregnancy and development"

M. J. SANCHEZ, M. O. MUENCH, M. G. RONCAROLO, L. L. LANIER, J. H.

PHILLIPS (USA) - "Identification of a common T/NK cell progenitor in human fetal thymus"

N. L. VUJANOVIC, L. POLIMENO, A. FRANCAVILLA, T. T. STARZI, R. B. HERBERMAN, T. L. WHITESIDE (USA) - "Changes in functions of liver-resident natural killer cells during the process of liver regeneration in rats"

Poster discussion

10:30 a.m. - 11:00 a.m. Coffee break

Session IIa: "NK cell recognition of MHC Class I molecules: specificity and clonal diversity"

Chairpersons: Klas Karre (Sweden), Lorenzo Moretta (Italy)

11:00 a.m. - 1:00 p.m. **L.L. LANIER** (USA) - "NK cell recognition of HLA Class I molecules: specificity, clonal diversity, and receptors"

M. CELLA, A. LONGO, G. B. FERRARA, J. L. STROMINGER, M. COLONNA (Switzerland, USA, Italy) - "NK3-specific natural killer cells are selectively inhibited by Bw4 positive HLA alleles with isoleucine 80"

E. CICCONE, D. PENDE, L. NANNI, C. DI DONATO, O. VIALE, A. BERETTA, M. VITALE, S. SIVORI, A. MORETTA, L. MORETTA (Italy) - "General role of HLA

Class I molecules in the protection of target cells from lysis by NK cells. Evidence that the free heavy chain of Class I molecules is not sufficient to mediate the protective effect"

C. SENTMAN (Sweden) - "NK cell recognition of MHC: Class I 'protective motifs' shared by specific murine H-2D alleles"

H. GUSTAF LJUNGGREN (Sweden, USA) - "Altered NK cell repertoire in TAP 1 mutant mice"

J. TORGILS VAAGE, C. NAPER, G. LOVIK, K. WONIGEIT, B. ROLSTAD (Norway, FRG) - "MHC control on NK cell allorecognition in the rat"

K. M. SMITS, P. J. K. KUPPEN, A. M. M. EGGERMONT, G. J. FLEUREN (The Netherlands) - "Masking of MHC Class I on target cells results in enhanced lysis by rat IL2-activated natural killer cells"

Poster discussion

1:00 p.m.

Lunch

4:00 p.m. - 5:00 p.m.

Poster viewing: Session II b

Session IIb: "NK cell recognition of MHC Class I molecules: receptors"

Chairpersons: Lewis Lanier (USA), William Seaman (USA)

- 5:00 p.m. - 7:00 p.m. **W.M. YOKOYAMA, B.F. DANIELS, H.R.C. SMITH, W.E. SEAMAN, D.H. MARGULIES, F. M. KARLHOFFER (USA)** - "The Ly-49 family of murine NK cell receptors"
- B. DANIELS, W. YOKOYAMA, W. E. SEAMAN (USA)** - "Evidence that Ly-49 recognizes carbohydrate structures on H-2D^d"
- K. BEZOUSKA, M. POSPISIL, R. GIORDA, W.H. CHAMBERS, T. FEIZI (Czech Republic, USA, UK)** - "Rat NK cell antigen NKR-P 1 is a carbohydrate-binding protein"
- Y.Y.L. YU, V. KUMAR, M. BENNETT (USA)** - "Can 5E6 molecule mediate positive allorecognition by mouse NK cells?"
- A. MORETTA, M. VITALE, S. SIVORI, M. BARBARESI, L. OLCESE, L. MORELLI, R. AUGUGLIARO, C. BOTTINO (Italy)** - "Human NK receptors for HLA- Class I alleles"
- N. WAGTMANN, R. BIASSONI, M. MALNATI, A. MORETTA, E. O. LONG (USA, Italy)** - "Purification of a member of the p58 family of putative NK cell surface receptors"
- Poster discussion

SOCIAL PROGRAM

8:30 p.m. Folk dinner

Friday, May 27

SCIENTIFIC PROGRAM

8:00 a.m. - 9:00 a.m. Poster viewing: Sessions III and IV

Session III: "Cytokines and cytokine receptors"

Chairpersons: Alberto Mantovani (Italy), Tuomo Timonen (Finland)

- 9:00 a.m. - 10:30 a.m. **G. TRINCHIERI (USA)** - "Natural killer cell stimulatory factor/Interleukin-12 (NKSF/IL-12): The missing link between natural resistance and adaptive immunity"
- J. ARAMBURU, L. AZZONI, B. PERUSSIA (USA)** - "IL-2 and IL-12/NKSF induce cytokine gene expression in NK and T cells via distinct molecular mechanisms"
- K. SOMERSALO, O. CARPEN, E. SAKSELA (Finland)** - "Stimulated natural killer cells secrete chemotactic activity, including NAP-1/IL8, which supports VLA-4 and VLA-5 mediated migration of T-lymphocytes"
- P. ALLAVENA, C. PAGANIN, G. BIANCHI, D. ZHOU, S. SOZZANI, A. MANTOVANI**

(Italy) - "IL-12 is chemotactic for NK cells and stimulates their interaction with vascular endothelium"

Poster discussion

10: 30 a.m. - 11:00 a.m. Coffee break

Session IV: "Mechanisms of cytotoxicity "

Chairpersons: Benjamin Bonavida (USA), Eckhard Podack (USA)

11:00 a.m. - 12:30 p.m. **E. PODACK, D. NELSON, M. A. BOWEN, R. LEE, G. DENG, K. J. OLSEN (USA)** - "Cytotoxic mechanisms and their regulation"

A. JEWETT, B. BONAVIDA (USA) - "Characterization of cell surface receptors associated with target-induced split anergy and programmed cell death in a subset of NK cells"

T. SAYERS, T.A. WILTROUT, M.J. SMYTH, K.S. OTTAWAY, A.M. PILARO, R. SOWDER, L.E. HENDERSON, A. R. LLOYD (USA, Germany, Australia) - "Purification and cloning of a novel serine protease, RNK-TRYP-2, from a rat natural killer cell leukemia"

R.H. GOLDFARB, R. B. HERBERMAN, K. WASSERMAN, A. J. RIVETT, R. P. KITSON (USA, UK) - "IL-2 activated NK cells: role

of nongranzyme proteases in NK functions including cytotoxicity"

M. B. BOCHAN, Z. BRAHMI (USA) - "Target cell-directed rapid degradation of TNF messenger RNA in human CTL"

M.G. CIFONE, C. FESTUCCIA, L. CIRONE, P. RONCAIOLI, G. DeNUNTIIS, A. SANTONI (Italy) - "Induction of the nitric oxide-synthesizing pathway in fresh and interleukin 2-cultured rat natural killer cells"

H. SHAU, L. H. BUTTERFIELD, A. KIM, S. GOLUB (USA) - "Characterization of human natural killer enhancing factor as an antioxidant protein"

Poster discussion

12:30 p.m. - 2:00 p.m. Lunch

2:00 p.m. - 3:00 p.m. Poster viewing: Session V

Session V: "Non MHC receptors and signal transduction"

Chairpersons: John Ortaldo (USA), Angela Santoni (Italy)

3:00 p.m. - 5:30 p.m. **P.J. LEIBSON, A.T. TING, J.D. BONNEMA, R. T. ABRAHAM (USA)** - "Fc receptor initiated signal transduction during NK cell activation: regulatory roles for p21ras and phosphatidylinositol 3-kinase"

J. J. PEREZ, I. MELERO, J. ARAMBURU, M. LOPEZ-BOTET (Spain) - "Functional ambivalency of the Kp43 (CD94) NK-associated surface antigen"

D. W. McVICAR, M. KAWAMURA, J. JOHNSTON, T. MUSSO, B.K. LAL, Y.Q. CHEN, X. ZHANG, J. E. STAPLES, L. VARESI, J. R. ORTALDO, J. J. O'SHEA (USA) - "Protein tyrosine kinases (PTK) in natural killer cells and activated T-lymphocytes"

J.G. ALTIN, E.B. PAGLER, B. F. KINNEAR, H. S. WARREN (Australia) - "Molecular associations involving CD16, CD45 and ζ and γ chains on human natural killer cells"

L. AZZONI, B. PERUSSIA (USA) - "Effects of Fc γ RIIIA ligand binding on IL-2 induced NK cell proliferation"

E. VIVIER, P. ANDERSON (France, USA) - "Biochemical and functional characterization of PEN5, a carbohydrate epitope selectively expressed on natural killer cells"

R. GALANDRINI, R. DE MARIA, M. PICCOLI, L. FRATI, A. SANTONI (Italy) - "CD44-mediated costimulation of human NK cell functions"

S. L. GIARDINA, S. K. ANDERSON, H. A. YOUNG, T. SAYERS, W. H. CHAMBERS, G. PALUMBO, J. R. ORTALDO (USA) - "Selective abrogation of NK activity in RNK cells using anti-sense NK-TR1"

Poster discussion

SOCIAL PROGRAM

6:00 p.m. - 8:00 p.m. Walking tour of Taormina; visit to the Greek Theatre

9:00 p.m. Gala dinner

Saturday, May 28

SCIENTIFIC PROGRAM

8:00 a.m. - 9:00 a.m. Poster viewing: Session VI

Session VIa: "In vivo role of NK cells in resistance to infections"

Chairpersons: Christine Biron (USA), Ronald Herberman (USA)

9:00 a.m. - 10:00 a.m. C. BIRON (USA) - "Regulation of NK cell responses in vivo"

R.M. WELSH (USA) - "The role of MHC molecules and their peptides in natural resistance to viral infections"

R. T. GAZZINELLI, E. R. DENKERS, A. SHER (USA) - "NK cells are alternative effectors of interferon- γ dependent immunity against *toxoplasma gondii* and contribute to early resistance to acute infection"

J. A. D'ORAZIO, G. W. BURKE, III, J. STEIN-STREILEIN (USA) - "*Staphylococcus aureus* enterotoxin B (SEB) requires T lymphocytes for augmentation of natural killer (NK) and lymphokine activated killer (LAK) activities but can directly initiate interferon gamma (IFN γ) secretion from NK cells"

Poster discussion

10:00 a.m. - 10:30 a.m. Coffee break

Session VIb: "In vivo role of NK cells in resistance to tumors"

10:30 a.m. - 12:00 p.m. M. J. ROBERTSON, R. J. SEIFFER, C. M. CANNING, J. RITZ (USA) - "Manipulation of human natural killer cells in vivo using low-dose recombinant human interleukin-2"

T. L. WHITESIDE, S. YASUMURA, W-c. LIN, H. HIRABAYASHI, N.L. VUJANOVIC, R.B. HERBERMAN (USA) - "Immunotherapy of established liver metastases of human gastric carcinoma with IL2-activated natural killer cells"

R. BURTON, Y. C. SMART (Australia) - "Natural cytotoxic cells mediate immunosurveillance against 3-methylcholanthrene and mineral oil carcinogenesis in mice"

R. H. GOLDFARB, U. NANNMARK, B.R. JOHANSSON, M. HOKLAND, K. WASSERMAN, R. B. HERBERMAN, R.P. KITSON, M. OHASHI, K. W. BRUNSON, M. JORDAN, C. MILLER, D. McCASLIN, M. GABAUER, P. H. BASSE (USA, Sweden, Denmark, Japan) - "IL-2 activated NK cells: interactions with tumor cells and endothelial cells within tumor metastases: necessary but not sufficient for therapy of established metastases?"

Poster discussion

12:00 p.m. - 12:15 p.m. Concluding remarks
RONALD B. HERBERMAN

SOCIAL PROGRAM

12:30 p.m. Lunch

POSTERS

Thursday, May 26 - 8:00 a.m. - 8:45 a.m.

Session I: "Ontogeny and tissue distribution"

E. AYROLDI, L. CANNARILE, G. MIGLIORATI, F. D'ADAMIO, L. D'ADAMIO, C. RICCARDI (Italy) - "CD44 (Pgp-1): a rescuing molecule that prevents T cells from programmed cell death"

C. CANTONI, D. DE TOTERO, F. LAURIA, D. RASPADORI, R. CONTE, S. FERRINI, P.L. TAZZARI, R. BIASSONI (Italy) - "NK cells and CD3⁺ thymocytes as normal counterparts of CD3⁺ large granular lymphocyte expansions"

B.A. CROY, B.A. McBEY, S.R. DELGADO (Canada) - "Differentiation of the metrial gland in pregnant, genetically mutant mice as a model system for analysis of the natural killer cell lineage"

D.V. DELFINO, K.D. PATRENE, R. DELEO, A.B. DELEO, R.B. HERBERMAN, S.S. BOGGS (USA) - "Enriching NK precursors: a stromal dependent limiting dilution assay of populations of CD44 bright versus negative/dim (NEG/DIM) from mouse bone marrow cells"

M. GARCIA-BARCINA, V. NEAUD, L. DUBUISSON, L. BOUSSARIE, J. SARIC, P. BIOULAC-SAGE, C. BALABAUD (France, Spain) - "Morphological study of "in vitro" interactions between liver-associated lymphocytes and Kupffer cells isolated from human liver"

B. LUKOMSKA, W. GAWRON, M. GARCIA-BARCINA, M. WINNOCK, J. SARIC, P. BIOULAC-SAGE, C.H. BALABAUD, W.L. OLSZEWSKI (Poland, France) - "Distinct cell subsets of human liver associated lymphocytes and peripheral blood cells adhere to the liver tissue sections"

A.L. MAJURY, H.F. PROSS (Canada) - "Natural killer (NK) cells in human umbilical cord blood cultures"

H.S. WARREN, B.F. KINNEAR, L.J. SKIPSEY, R.G. PEMBREY (Australia) - "Differential expression of CD45R0 on natural killer (NK) cells in patients with an NK lymphocytosis"

Z. YU, B.A. CROY, H. ENGELHARDT, G.J. KING (Canada) - "Cytolytic cells isolated from the pig uterus during early pregnancy kill both trophoblast and K562 target cells without prior activation by IL-2"

Session IIa: "NK cell recognition of MHC Class I molecules: specificity and clonal diversity"

R. BIASSONI, P. COSTA, S. VERDIANI, R. CONTE, A. CAMBIAGGI, S. FERRINI, D. PENDE, E. CICCONE, L. MORETTA (Italy) - "HLA Class I alleles as protective elements from cloned NK cell mediated lysis: analysis of the protection effect of different native, chimaeric or point mutated Class I molecules"

M. COLONNA, G. BORSELLINO, M. FALCO, G.B. FERRARA, J.L. STROMINGER (USA, Italy) - "HLA-C is the inhibitory ligand that determines dominant resistance to lysis by NK1- and NK2-specific NK cells"

C. FALK, S. KRESSENSTEIN, W.P.K. JUI, B. MAGET, K. SEEBART, D.J. SCHENDEL (Germany) - "Alterations in the expression of HLA-C molecules can be detected by some natural killer cells and lymphokine activated killer cells"

M.D. GALIANI, F. BORREGO, L. PEREZ-BERMEJO, R. SOLANA, J. PENA (Spain) - "Effect of HLA Class I gene transfection of target cells in NK cell activation induced by NK-target interaction"

R. GLAS, M. WALDENSTROM, P. HOGLUND, G. KLEIN, K. KARRE, H.-G. LJUNGGREN (Sweden) - "Rejectability of tumors in scid mice determined by MHC Class I expression on the graft"

P. HOGLUND, M. JOHANSSON, C. BIEBERICH, G. JAY, U. LENDAHL, K. KARRE (Sweden, USA) - "Coexistence of transgene positive and negative cells in a H-2 transgenic strain with a chimeric phenotype leads to NK tolerance against "missing self"

J. KAPLAN, M. HIRAYAMA, C. GENYEA (USA) - "Distinct populations of NK cells recognize nonself Class I MHC antigens and self non-MHC antigens"

H.-G. LJUNGGREN, P. MOMBAERTS, S. TONEGAWA (Sweden, USA) - "NK cell mediated cytotoxicity in RAG 1/2 and T cell receptor α / β or γ / δ mutant mice "

M.S. MALNATI, M. WESTON, L. NANNI, E. CICCONE, A. MORETTA, U. UTZ, W. BIDDISON, E.O. LONG (USA, Italy) - "Specific NK-mediated lysis of HLA-A2 transfectants"

M. SALCEDO, P. HOGLUND, H.-G. LJUNGGREN (Sweden) - "Natural killer cell interaction with murine allogeneic MHC Class I molecules"

M. SALCEDO, F. MOMBURG, G.J. HAMMERLING, H.-G. LJUNGGREN (Sweden, Germany) - "Resistance to natural killer cell lysis conferred by TAP 1/2 genes in human antigen processing mutant cells"

C.L. SENTMAN, U. LENDAHL, K. KARRE (Sweden) - "Differential effects of H-2 Class I transgenes on murine NK cell reactivity"

C.L. SENTMAN, M.Y. OLSSON, M. SALCEDO, P. HOGLUND, K. KARRE (Sweden) - "H-2 allele specific protection from NK cell lysis in vitro for lymphoblasts but not tumor targets. Protection mediated by $\alpha 1 / \alpha 2$ domains"

4:00 p.m. - 5:00 p.m.

Session IIb: "NK cell recognition of MHC Class I molecules: receptors"

H. BASIRI, K. KIURA, E. DENARDIN, I. NAKAMURA (USA) - "Hh-I^b specific recognition of allogeneic normal cells *in vitro* by Ly-49 positive and negative NK cells"

J. BRENNAN, F. TAKEI, D. MAGER (Canada) - "Expression of the Ly-49 family by subsets of natural killer cells"

E. CARBONE, S. ZAPPACOSTA, S. FONTANA (Italy) - "Effect of sHLA on NK activity "

M. DUCHLER, S. NOVAK, M. OFFTERDINGER, C.T. CHU, F.H. BACH, E. HOFER (Austria) - "NKG2, a potential receptor participating in NK cell target cell interactions"

S. FERRINI, A. CAMBIAGGI, R. MEAZZA, S. SFORZINI, S. MARCIANO, M.C. MINGARI, L. MORETTA (Italy) - "T cell clones expressing the p58 NK related receptor molecule display heterogeneity in phenotypic properties and p58 function"

S. LEMIEUX, P. GOSSELIN, Y. LUSIGNAN, L. MORELLI (Canada) - "Updating structural and functional properties of the murine NK2.1 antigen"

M.Y. OLSSON, C.L. SENTMAN, K. KARRE (Sweden) - "Regulation of the putative MHC receptor Ly-49 on natural killer cells of H-2D^d expressing mice "

Friday - May 27 - 8:00 a.m. - 9:00 a.m.

Session III: "Cytokines and cytokine receptors"

G. BELLONE, S. SILVESTRI, G. EMANUELLI, G. TRINCHIERI (Italy, USA) - "Interferon α inhibits the proliferative response and cytokine production induced by interleukin-2 and interleukin-12 in human natural killer cells"

C.S. BRISSETTE-STORKUS, P.M. APPASAMY, C.L. KAUFMAN, S.T. ILDSTAD, W.H. CHAMBERS (USA) - "Establishment and characterization of rat NK lines and clones"

A. JEWETT, B. BONAVIDA (USA) - "Role of endogenous TNF- α and IFN- γ secretion and TNF-R expression on the various pathways of activation of immature NK cells by IL-2, IL-12 and IFN- α "

M.J. ROBERTSON, T. NAKARAL, J. RITZ (USA) - "Role of interleukin-2 and costimulatory signals in the proliferation of human natural killer cells"

Session IV: "Mechanisms of cytotoxicity"

A. BAJPAI, Z. BRAHMI (USA) - "Target cell-induced inactivation of cytolytic lymphocytes: role and regulation of phosphoprotein phosphatases"

B.M. BROOKS, K.P. WINDEBANK (UK) - "Binding of lymphocytes to tumour cells: analysis of intracellular calcium changes and phenotype"

D.M. CALLEWAERT, D. HUDIG (USA) - "Glucocorticoid regulation of granzyme expression in cloned natural killer cells and cytotoxic T lymphocytes"

D.M. CALLEWAERT, V.K. MOUDGIL, J. MOLDOVAN, S. OLSEN (USA) - "Effects of the antisteroids RU486 and ZK98299 on the phenotype and function of cloned human natural killer cells"

P. CARETTO, T. SCIUMBATA, F. MARCUCCI, G. GROMO, F. LEONI (Italy) - "Mechanisms of cell killing by natural killer (NK) cells: sequential involvement of protein tyrosine kinase (PTK) and protein kinase C (PKC)"

J.-H. CHEN, B. BONAVIDA (USA) - "Characterization of neutralizing and blocking antibodies on NK-mediated cytotoxic functions"

M.G. CIFONE, L. CIRONE, C. FESTUCCIA, A. MECCIA, P. MUZI, S. D'ALO, L. PARENTE, E. SOLITO, A. SANTONI (Italy) - "Calpactin I (annexin II, lipocortin II) expression in rat NK cells"

C. GARDINER, D.J. REEN (Ireland) - "IL-4 is a differential regulator of newborn LAK cell killing of targets by apoptotic and necrotic mechanisms"

W.S. GOEBEL, G. HOMMEL-BERREY, B. SU, Z. BRAHMI (USA) - "Lymphokine-activated killer cell-mediated cytotoxicity does not induce viral RNA degradation"

E. MARIANI, S. SGOBBI, L. CATTINI, A. PIACENTINI, E. PODACK, A. FACCHINI (Italy, USA) - "Perforin expression in CD8 and CD16 peripheral lymphocytes in elderly people"

T.J. SAYERS, C.R.D. CARTER, R.H. WILTROUT, D.D. TAUB (USA) - "Generation of antigenic peptides by NK granule serine

proteases (granzymes)"

M.J. SMYTH, V.A. APOSTOLIDIS, K.A. BROWNE, J.A. TRAPANI (Australia) - "Granule serine proteases are normal nuclear constituents of natural killer cells"

M. SMYTH, K. BROWNE, H.S. WARREN (Australia) - "Distinct granzyme expression in human CD3- large granular- and small agranular-lymphocytes displaying non-MHC-restricted cytolytic activity"

B. SU, M.R. BOCHAN, W.L. HANNA, C.J. FROELICH, Z. BRAHMI (USA) - "Human granzyme B is essential for DNA fragmentation of susceptible target cells"

2:00 p.m. - 3:00 p.m.

Session V: "Non MHC receptors and signal transduction"

E. AGUADO, J.M. MILLAN, J.A. MADUENO, I.J. MOLINA, J. PENA (Spain) - "CD43-mediated activation induces a specific pattern of protein tyrosine phosphorylation in NK cells"

F. BORREGO, M.D. GALIANI, L. PEREZ-BERMEJO, J. PENA, R. SOLANA (Spain) - "NK cell activation induced by CD69 involves protein tyrosine phosphorylation"

C.S. BRISSETTE-STORKUS, R.H. GOLDFARB, M. JORDAN, H.M. WORSEY, P.M. APPASAMY, W.H. CHAMBERS, S.F. ZIEGLER (USA) - "Activation of cytolytic function via CD69 in an NKR-PR+/ α β TCR+ mouse cell line"

D.L. EVANS, J.H. LEARY, III, L. JASO-FRIEDMANN (USA) - "Expression of isoforms of src family proto-oncogene kinases and the role of phosphatases in nonspecific cytotoxic cells following receptor crosslinkage"

J.E. GESSNER, R.E. SCHMIDT (FRG) - "Identification of alternative spliced transcripts of Fc γ RIII-A (CD16TM) in human NK cells"

A. GISMONDI, M. MILELLA, G. PALMIERI, F. MAINIERO, M.

PICCOLI, L. FRATI, A. SANTONI (Italy) - "Crosslinking of β_1 integrins on human NK cells results in tyrosine phosphorylation of 105-115 kd proteins"

T. HELANDER, O. CARPEN, T. TIMONEN (Finland) - "Reorganization of ICAM-2 on target cells induces sensitivity to IL-2 activated non-MHC restricted killer cells"

Y.B. KIM, P.J. HALLORAN, D.H. CHO, S.C. ALLER, J. ZHANG (USA) - "Cytolytic trigger molecular complex PNK-E/G7 on porcine NK cells and phagocytes"

Q.H. LI, P. FITZGERALD-BOCARSLY (USA) - "Signal transduction in the activation of human natural killer cells against herpes simplex virus Type 1-infected fibroblasts"

M. MANCIULEA, H. RABINOWICH, D. METES, W-c. LIN, S.J. COREY, A. SULICA, R.B. HERBERMAN, T.L. WHITESIDE (USA) - "Activation of protein tyrosine kinases in human NK cells by triggering via Fc μ receptor"

L.M. MASON, H.A. YOUNG, J.R. ORTALDO, S.A. ANDERSON (USA) - "Cloning of LGL- 1"

G. PALMIERI, A. SERRA, A. GISMONDI, M. MILELLA, M. PICCOLI, L. FRATI, A. SANTONI (Italy) - " β_1 integrin crosslinking by specific mAb or fibronectin enhances NK cytotoxic functions"

J.J. PEREZ, I. MELERO, A.G. ARROYO,, F. SANCHEZ-MADRID, M. LOPEZ-BOTET (Spain) - "Signaling via α_1/β_1 integrin (VLA-1) upregulates LFA-1-dependent cell adhesion and TNF- α production in human NK cells"

R. RABINOWICH, W-c. LIN, R.B. HERBERMAN, T.L. WHITESIDE (USA) - "Role of β_1 and β_3 integrins expressed on human NK cells in protein phosphorylation, cytokine production and cell proliferation"

A.J. DA SILVA, P. ANDERSON, C.E. RUDD, E. VIVIER (USA, France) "Association of a 70 KDA tyrosine-phosphoprotein with the CD16: ζ : γ complex expressed in human natural killer cells"

K. TESHIGAWARA, K. SUGIE, A. UCHIDA (Japan) - "Involvement of a novel epitope of LFA-1 molecules in the activation of natural killer cells"

Saturday, May 28 - 8:00 a.m. - 9:00 a.m.

Session VIa: "In vivo role of NK cells in resistance to infections "

S.B. CHEKNEV, I.A. TARKHANOVA, E.E. BABEVA, A.J. KULBERG (Russia) - "A peptidoglycan of cyanobacteria as a factor affecting natural immunity"

L.A. GOLDMAN, P. FITZGERALD-BOCARSLY (USA) - "Induction of natural killer (NK) cell activity and IFN- α production does not require active expression of HSV-1 immediate early gene products"

L. JASO-FRIEDMANN, J.H. LEARY, III, D.L. EVANS (USA) - "Isolation and sequencing of a novel protozoan parasite antigen recognized by nonspecific cytotoxic cells"

L. PEREZ-BERMEJO, F. BOREGO, M.D. GALIANI, J. PENNA, R. SOLANA (Spain) - "Expansion of CD56^{bright} NK cells in Graves disease: phenotypic and functional analysis"

M.C. SIRIANNI, I. MEZZAROMA, F. AIUTI, A. MORETTA (Italy) - "Cytolytic activities of natural killer cells during human immunodeficiency virus type 1 infection"

T.L. WHITESIDE, D.P. SKONER, J.W. WILSON, W.J. DOYLE, R.B. HERBERMAN (USA) - "Differential effects of local infection with influenza A virus and rhinovirus on systemic natural immunity in man"

Session VIb: "In vivo role of NK cells in resistance to tumors "

M. GHONEUM (USA) - "NK immunomodulation by active hemicellulose compound (AHCC) in 17 cancer patients"

P.J.K. KUPPEN, P.H. BASSE, R.H. GOLDFARB, C.J.H. VAN DE VELDE, G.J. FLEUREN, A.M.M. EGGERMONT (The Netherlands, USA) - "Infiltration of CC531 lung tumors by adoptively

transferred interleukin-2-activated natural killer cells in Wag rats"
G. MAKI, J.H. GONG, G.J. DOUGHERTY, F. TAKEI, H.G. KLINGEMANN (Canada) - "Characterization of a human cell line with characteristics of activated natural killer cells to study NK cell-leukemic cell interactions"

R. MARTINIELLO, Y.C. SMART, R.C. BURTON (Australia) - "A subset of murine NK cells mediates natural killing and natural cytotoxicity and immunosurveillance against transplantable tumours in certain strains of inbred mice"

N.L. VUJANOVIC, S. YASUMURA, H. . HIRABAYASHI, W-c. LIN, S. WATKINS, R.B. HERBERMAN, T.L. WHITESIDE (USA) - "Antitumor activity of human IL2-activated natural killer (A-NK) cells in solid tumor tissue"

T.L. WHITESIDE, S. YASUMURA, R.B. HERBERMAN (USA) - "The G₀/G₁ cell cycle arrest and changes in tumor cell susceptibility to lysis induced by soluble factors produced by IL2-activated NK cells"

