Proc. Hiroshima Univ. RIRBM, 44, 2003

Division of Clinical and Experimental Oncology
Department of Hematology and Oncology

Professor Akiro KIMURA, M.D., Ph.D.
Associate Professor Hideo TANAKA, M.D., Ph.D.
Assistant Professor Hideo HYODO, M.D., Ph.D.
Assistant Professor Akira SAKAI, M.D., Ph.D.* (Mar. 1. 2003.～)
Research Associate Takeshi SHIMOMURA, M.D., Ph.D.*
Research Associate Keichiro MIHARA, M.D., Ph.D. (～Jan. 1. 2003 on leave to U.S.A.)
Research Associate Shinya KATSUTANI, M.D., Ph.D.*
Postgraduate Student Yuta KATAYAMA, M.D.
Postgraduate Student Tanvira Afroze SULTANA, M.D. (～Mar. 29. 2003.)
Postgraduate Student Kinro ITO, M.D.
Postgraduate Student Jun IMAGAWA, M.D.
Postgraduate Student Hiromasa NIIMI, M.D.
Postgraduate Student Takuo ITO, M.D.
Postgraduate Student Yoshiko OKIKAWA, M.D.
Monbukagakusho Scholarship Student
Moniruddin Chowdhury, M.D. (Oct. 1. 2002.～Mar. 31. 2003.)
Visiting Research Scholar (Visiting Professor)
Larisa Ivanovna DANILOVA, M.D., Ph.D. (Oct. 8. 2002～Jan. 8. 2003)
Visiting Research Scholar
Ligen LIU, M.D. (May 23. 2002.～Nov. 20. 2002.)

*1 Dept. Int. Med. (RIRBM), Hiroshima Univ. Med. Hosp.

(March 31, 2003.)

Department of Hematology and Oncology has carried out the clinical, hematological and experimental studies on the late effects of atomic bomb-radiation survivors. Focus has been made on clarifying the pathophysiological mechanism and establishing the treatment procedures for hematological disorders such as leukemia, myeloproliferative disorders, myelodysplastic syndrome, malignant lymphoma, multiple myeloma, aplastic anemia and other anemias and thrombocytopenia. The main research subjects being conducted are summarized as follows.

1) Hematopoiesis and immune function in atomic bomb survivors.
2) Diagnosis and treatment of leukemia, myeloproliferative disorders, myelodysplastic syndrome, multiple myeloma, malignant lymphoma and other hematological malignancies.
3) Basic and clinical studies on aplastic anemia, idiopathic thrombocytopenic purpura, and hemolytic anemia.
4) Basic and clinical study of hemostasis and thrombosis.
5) Proliferation, differentiation and cell death of normal and malignant hematopoietic cells.

The Science Promotion Fund from the Ministry of Education, Science, Sports and Culture provided Grant-in Aids for studies on the following subjects: 1)Myelodysplastic syndrome (MDS) among atomic bomb survivors (Prof. A. Kimura), 2) Myelodysplastic syndrome (MDS) and leukemia in the residents near former USSR nuclear test site in Semipalatinsk (Prof. A. Kimura), 3)Deficiency of CD27 expression in human multiple myeloma cells (Dr. A. Sakai).

Subjects supported by a Grant from the Ministry of Health and Welfare of the Japanese Government were 1)Cooperative studies on the investigation of intractable hematopoietic disorders by Prof. A. Kimura (Chief: Dr. M. Omine), 2)Cooperative studies on the molecular biological investigations on the hematologic and immune disorders of the atomic bomb survivors by Prof. A. Kimura(Chief: Dr. K. Kamiya). Tsuchiya Foundation offered grants for 1)Gene analysis of malignant lymphoma from single lymphoma cell to Dr. A. Sakai, 2)Interferon therapy and interferon receptor of chronic myelogeneous leukemia cells to Dr. H. Tanaka, and 3)Identification of epitopes responsible for immune thrombocytopenic purpura (Dr. T. Shimomura).

This department has managed an outpatient clinic and inpatient ward, which belong to Hiroshima University Hospital. This management has been done in cooperation with the staff of the Hiroshima University Hospital, affiliated to the School of Medicine (Chief of the Outpatient Clinic: Dr. H. Tanaka and Chief of the Inpatient Ward: Dr. T. Shimomura).

Prof. A. Kimura, Dr. H. Tanaka and Dr. H. Hyodo conducted lectures of Hematology for the 3rd and 4th year students at the Medical School, Hiroshima University. Prof. A. Kimura and Dr. H. Tanaka conducted lectures of Hematology-Oncology for the 5th and 6th year medical students. Drs. S. Katsutani, K. Mihara, T. Shimomura, A. Sakai, H. Hyodo, H. Tanaka and Prof. A. Kimura provided practical trainings for the 5th and 6th year medical students at outpatient clinic and inpatient ward. Trainings for residents of internal medicine were also provided.

Drs. H. Okita (Director, Ohtake National Hospital), H. Dohy (Vice director, Hiroshima Red Cross Hospital & Atomic-bomb Survivors Hospital), A. Ihara (Chief of Internal Medicine, Kure National Hospital), N. Sasaki (Kure Kyosai Hospital), K. Oda (Chief of Internal Medicine, Hiroshima City Hospital)were invited to the Department of Hematology Oncology as part time lecturers.

The summary of the clinical results in 2002 (Jan.～Dec.)is as follows:

1)Of the 1,239 cases (600 male and 639 female)at the outpatient clinic, 1,063 had hematological disorders (104 leukemias, 71 myeloproliferative disorders, 39 myelodysplastic syndromes, 156 malignant lymphomas, 89 multiple myelomas, 45 aplastic anemias, 228 thrombocytopenias and others), and the rest had non hematological diseases.

2)Of the 405 cases of inpatients, there were 385 hematological disorders (107 leukemias, 16 myeloproliferative disorders, 19 myelodysplastic syndromes, 133 malignant lymphomas, 45 multiple myelomas, 16 aplastic anemias, 4 other type of anemias, 5 neutropenia, 20 thrombocytopenias, 11 hemorrhagic diathesis, 9 other diseases)and 20 non hematological diseases.

3)Thirty one cases died including 12 leukemias, 0 myeloproliferative disorders, 4 myelodysplastic syndrome, 8 malignant lymphomas, 5 multiple myelomas, and 2 aplastic anemias. Autopsies were performed in 11 out of the 31 deaths (autopsy rate: 35.4%).

Thanks were given to the staff of International Radiation Information Center, who operated the computer Fujitsu PRIMERGY N800.

1. Mechanism of anti-proliferative action of interferon (IFN).

Tanaka, H., Ito, K., Ito T., Liu Ligen, Kimura, A.

Purpose: Interferon (IFN) has been widely used as an anti-proliferative drug for malignant diseases like multiple myeloma (MM) and chronic myelogenous leukemia (CML). We aim to clarify the mechanisms of IFN action on these hematological malignant cells.

Results: IFNAR1 and IFNAR2 expression on CD34-positive fraction of fresh CML cells were studied. IFNAR2 expression was higher in clinically IFN-sensitive patients than IFN-resistant patients. IFNAR2 expression showed down-regulation during

the IFN treatment in good responders. RQ-PCR analysis showed that these changes might be regulated from mRNA level. L-selectin expression was also increased by IFN treatment. Soluble IFNR level was correlated with platelet counts in CML patients. Using subline that is resistant to IFN, we showed that IFN augmented the apoptotic effect caused by irradiation.

Projects: We will continue examining IFNAR2a, 2b, 2c expressions on CD34-positive cells in CML patients by RQ-PCR, and analyze the regulation mechanism. We analyze involvement of TRAIL and XAF1 in anti-apoptotic action of IFN using SiRNA transfection method.

2．Clinical study of therapeutic effect and resistance of Imatinib on CML patients.

Tanaka, H., Ito T., Ito, K., Kimura, A.

Purpose: Strategy of treatment of CML has changed dramatically by Imatinib. Resistance mechanism to imatinib has also been clearer, thus concomitant use of interferon（IFN）is now under consideration.

Projects: Changes of parameters at short periods（within three months）after treatment of imatinib. We will check BCR/ABL, BACH2, IFNAR2c mRNA by RQ-PCR, BCR/ABL-positive cells by neutrophils-FISH, and IFNAR2, VLA-4, VLA5, L-selectin on CD34-positive cells by Flowcytometer. We analyze ABL gene mutation in imatinib-resistant patient by PCR-SSCP. Using CML cell line and resistant cell subline which were established last year, we will check the biological difference of in vitro sensitivity to imatinib between the two cell lines by cDNA microarray methods etc.

3．Myelodysplastic syndrome（MDS）/leukemia among Atomic bomb survivors.

Niimi, M., Imagawa, J., Harada, H.[1)], Tanaka, H., Kuramoto, K.[2)], Ban, S.[3)], Kyo, T.[4)], Imanaka, F.[5)], Oda, K.[6)], Satoh, K.[7)], Ohtaki, M.[8)], Hayakawa, N.[8)], Kimura, A.（[1)]Department of Molecular Oncology, [2)]NIH, [3)]Frontier Research Center, National Institute of Radiological Sciences, Chiba, [4)]Hiroshima Red Cross Hospital & Atomic-bomb Survivors Hospital, [5)]Hiroshima Asa City Hospital, [6)]Hiroshima City Hospital, [7)]Department of Environmetrics and Biometrics, [8)]Department of Epidemiology）

MDS is a hematopoietic clonal disorder common in aged people, and is one of the preleukemic state. In epidemiological study we showed the relative risk of MDS in relation to radiation dose is higher than that of solid tumor or that of recent leukemia. The effect of age at the time of bombing was significant, showing that younger aged at the time of bombing has higher relative risk.

In order to clarify the molecular mechanism of A bomb radiation-induced MDS/AML, we studied the mutations of AML1 which plays important roles in the definitive hematopoiesis by forming the transcription factor complex with CBFβ. AML1 mutations were identified in the large proportion(6/13)of A bomb radiation-exposed MDS patients. Further study showed the point mutations were identified at C-terminal side, in addition to N-terminal Runt domain. The high incidence of *AML 1* gene mutations in radiation-associated MDS/AML suggested that dysregulation of AML1 function plays pivotal roles in this category of hematopoietic disorders.

4．The expression and function of surface molecules on CD34-positive hematopoietic stem and progenitor cells in patients with myelodysplastic syndrome（MDS）.

Sultana Tanvira Afroze, Harada, H.[1)], Kyo, T.[2)], Kimura, A.([1)]Department of Molecular Oncology, [2)]Hiroshima Red Cross Hospital and Atomic-bomb Survivors Hospital）

In order to clavify the mechanism of neutropenia in MDS, $CD34^{++}$ cells with MDS and MDS-AML were observed by flowcytometry for expression of G-CSF receptor（G-CSFR）. Some patients in each disease type had significantly reduced expression of G-CSFR. Late stages of disease showed a higher proportion of high or low G-CSFR expression than early stages. Most of the patients with low expression had neutropenia. Neutropenia was relatively less present in the normal group, but it reappeared in the high group. Thus, lowered expression of G-CSFR might lead to neutropenia in MDS and MDS-AML patients.

We plan to analyse the mechanism of reduced G-CSFR expression in relation to the transcription factors, such as AML1, PU1 and C/EBP which regulate the G-CSFR expression.

5．Myelodysplastic syndrome（MDS）in relation to Radiosensitivity project.

Niimi, M., Tanaka, H., Ban, S.[1)], Imai, T.[1)], Kuramoto, K.[2)], Kyo, T.[3)], Oda, K.[4)], Kimura, A.（[1)]Frontier Research Center,National Institute of Radiological Sciences, [2)]NIH, [3)]Hiroshima Red Cross Hosptital & Atomic-bomb Survivors Hospital, [4)]Hiroshima City Hospital）

We are conducting the cooperative research project with the National Institute of Radiological Science to understand the high incidence of MDS among A bomb survivors and to clarify the mechanism of high sensitivity of MDS cells to radiation. The main research is focusing on the cDNA array analysis of bone marrow CD34 cells as well as lymphocytes from MDS patients of both A bomb survivors and non-A bomb survivors. This may differentiate the molecular mechanism of the MDS genesis between them, and can apply the development of MDS treatment.

6．Analysis of differential gene expression in myeloma cells by cDNA microarray.

Sakai, A., Katayama, Y., Okikawa, Y., Kimura, A.

Purpose: CD27 is a marker of memory B cells and its interaction with its ligand, CD70, is very important for differentiation into plasma cells. On the other hand, its interaction is suspected to induce apoptpsis. Furthermore, about 40% patients with multiple myeloma（MM）show cyclin D1 overexpression. The aim of the present study was to determine whether the loss of expression of CD27 correlates with the progression of MM or yelomagenesis, and to identify genes correlated with cyclin D1 overexpression.

Results & Discussion: Although CD27 is detected on normal plasma cells, its expression is significantly reduced with the progression of MM. Analysis using cDNA microarray showed 8up-regulated genes and 15 down-regulated genes in the coculture between CD27 transfected myeloma cells and CD70 transfected NIH3T3 cells. And analysis of the expression profiles showed that the significantly up-regulated genes were cyclin D1, CDC37 and BCL2, and down-regulated genes were cyclin D2 and CD9 antigen in MM cases with cyclin D1 overexression. But hierarchical clustering analysis of the data showed that myeloma cells of MM cases with cyclin D1 overexpression could not be distinguished clearly from those without it. Therefore, cyclin D1 overexpression does not lead to entry into the cell cycle, and MM cases with cyclin D1 overexpression do not seem to be in a specific group.

7．Analysis of effect of bone morphogenetic protein 6（BMP 6）and connective tissue growth factor（CTGF）on myeloma cells and mone marrow microenviroment.

Sakai, A., Okikawa, Y., Katayama, Y., Kimura, A.

Purpose: In a recent cDNA microarray study has reported that the intensity of expression of the CTGF gene is higher in germinal center B-cell-like DLBL than in activated B-cell-like DLBL, and an important factor predicting good prognosis in DLBL, and that the intensity of BMP6 gene was higher in activated B-cell-like DLBL than in germinal center B-cell-like DLBL, and an important factor predicting poor prognosis in DLBL. In our study, Both CTGF and BMP6 were overexpressed in some patients with myeloma and myeloma cell lies. CTGF is a cytokine produced by connective tissue cells after activation by another growth factor, TGF-β, and is implicated in multiple cellular events including angiogenesis, skeletogenesis, and wound healing. On the other hand, BMPs are members of the TGF-β superfamily of signaling molecules, and induce bone and cartilage formation and are now considered to be multifunctional cytokines. The function of BMP6 has been investigated and it was found that human cobblestone-area-forming cells in long-term marrow cultures and IL-6 production from marrow stromal cells were reduced after BMP6 treatment. If CTGF and BMP6 are secreted from myeloma cells, the effects of CTGF and BNP6 on the BM

microenvironment would be intriguing and remain to be clarified.

Plan: 1) Analysis of myeloma cell proliferation and differential gene expression by repression of CTGF and BMP6 gene using antisense-oligo or siRNA transfection. 2) Analysis of the expression of VEGF and RAKL in myloma cells or stromal cells from BM of patients with multiple myeloma.

8. Study of autologous and allogeneic PBSCT for hematological malignancies and solid tumors.

Hyodo, H., Takeshi, S., Tanaka, H., Yamaguchi, Y.[1)], Ota, N.[1)], Takata, N.[2)], Kimura, A. ([1)]Hiroshima Red Cross Blood Center, [2)]Division of Blood Transfusion Service, Hiroshima University Medical Hospital)

Purpose: Autologous peripheral blood stem cell transplantation (ABSCT) combined with high dose chemotherapy is standard salvage therapy for relapsed malignant lymphoma, recently. And it is applied to multiple myeloma with amyloidosis for prolonged survival.

In the case of allogeneic peripheral blood stem cell transplantation (Allo-PBSCT) we have to clear its safety and effectiveness compared with allogeneic bone marrow transplantation (Allo-BMT). And then, members of department of surgical oncology and we apply reduced intensity stem cell transplantation (mini- transplantation, RIST) to advanced solid tumors for immuno-therapy.

Progress and plan: Twenty-seven ABSCTs were performed for 25 cases of hematological malignancies and solid tumors. Twelve cases are alive. Thirteen cases relapsed within 4 months after ABSCT, and all of them were finally died. Two patients with multiple myeloma and amyloidosis were received successable ABSCT. And 2 patients with multiple myeloma were done PBSC collection.

Twelve cases of Allo-PBSCT were performed since 1996 in our department. Two cases were chronic myelogenious leukemia at chronic phase, six cases were AML, one case was MDS and two cases were solid tumors. Seven cases died due to recurrence and cytomegalo virus infection while five cases are alive without disease. The four patients with organ disorders received non myelo-ablative conditioning regimen in PBSCT (mini-transplant). Mini-transplant as well as donor lymphocyte infusion (DLI) are applied to elder patients and patients with organ disorders as a new immuno-therapy. We use VNTR method to monitor chimerism, as a marker of successful engraftment. We use DNA analysis to check monitor minimal residual disease including bcr-abl, AML1/MTG8 and CBFβ MYH11. New clinical study plan on mini-transplant and DLI for solid tumor has been approved by ethical committee of Hiroshima university Hospital in 2001.

We have two experience of mini-transplantation for fifty years old man with progressive staged intestinal cancer and fourty-seven years old man with progressive staged renal cell cancer. After 14days they recovered more than 1000/$\mu\ell$ of WBC counts and chimerism analysis of VNTR were both donar type until 30 days. We slowly reduced immuno-supressive drugs for prophyrax to GVHD after 60 days. After 100 days their anti-tumor effects were PD and NC without GVHD.

We have been the system of PBSC collection, processing, transportation and cryopreservation by cooperation with Hiroshima Red Cross Blood Center since 1997.

9. Functional analysis of bone marrow mesenchymal cells for a novel development of the hematopoietic stem cell transplantation.

Mihara, K., Kimura, A.

Many problems such as small pool of donor, limited number of stem cells, and so on, still have been left for hematopoietic stem cell transplantation (HSCT). Currently, "Ex vivo expansion" of stem cells must be only possible way to resolve these problems. However, transfection method has a couple of inevitable obstacles which are its low efficiency and safety. Actually, although HSC can be propagated through the culture with bone marrow stromal cells, there is no optimal mesenchymal cell line to support HSC. Moreover, bone marrow mesenchymal cells itself are heterogeneous and go to apoptosis like other fibroblasts through senescence. We developed immortalized bone marrow mesenchymal cells by transfection with hTERT. Intriguingly, $CD34^+$ cells were proliferating much more 100-fold than original input on bone marrow mesenchymal cells. We are currently

dissecting gene profiles of these cells by genetip.

10. Analysis of the pathogenesis in immune thrombocytopenic purpura (ITP).

Shimomura, T., Katsutani, S., Fujimoto, T.[1)], Fujimura, K.[1)], Kimura, A. ([1)]Department of Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences)

Purpose : Identification of platelet autoantigens for T cells in ITP.

Plans : 1) Detection of T cell proliferation specific for platelets using antigen delivery system or gene transferred-B lymphoblastoid cell lines and cloning of T cell lines responsive to platelets; 2) Analysis of T cell epitopes in platelets by utilizing the antigen delivery system and TOF-MAS; 3) Analysis for contribution of Helicobacter pylori infection to ITP pathogenesis.

Results : 1) We detected platelet-specific T cell proliferative response using the antigen delivery system in which platelets surface-labeled with hydrophilic biotin were incorporated to lymphoblastoid cell line via its B cell receptor. We are currently trying to establish platelet-responsive T cell lines. We also established platelet glycoprotein gene-transferred B lymphoblastoid cell lines and are testing proliferative responses of the established T cell lines to these cells 2) We established T cell lines responsive to Helicobacter pylori and try to investigate whether T cells stimulated with Helicobacter pylori help to produce platelet antibodies.

11. Study of thrombosis and hemostasis.

Katsutani, S., Shimomura, T., Fujimoto, T.[1)], Fujimura, K.[1)], Kimura, A. ([1)]Department of Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences)

Purpose : Analysis of the mechanisms of thrombosis and hemostasis under the physiological and pathological conditions, with intention for the development of new therapeutic strategies.

Plan : The structure and function of the platelet membrane glycoprotein V (GPV) is still unclear.

We have already cloned and characterized the gene encoding the murine GPV, and demonstrated that GPV is highly conserved protein and expressed specifically in the platelet-megakaryocyte lineage. To elucidate the mechanism of signal transduction via GPIb-IX-V complex, we investigate the protein that associates with GPV in the platelets, using Two-hybrid assay.

And we will analyse the structure and function of obtained protein.

12. International scientific joint research on late radiation effects of former USSR nuclear. test in Semipalatinsk.

Hyodo, H., Kimura, A.

We are conducting international scientific joint research work on the late effects of radionuclear disasters concerning leukemias and myelodysplastic syndromes (MDS). The radiation exposure-pattern in residents of Semipalatinsk area is different from that in Atomic bombing in Hiroshima. The exposure was chronic and both internal and external. We received from the main hospitals bone marrow smears of leukemia and MDS.

Eighteen cases, which were considered to be exposed to the radiation by the atomospheric nuclear tests conducted between 1949 and 1963, were studied morphologically and molecular biologically. Six AML M1, 1 M2, 2 M6, 1 unclassified AML, 1 ALL, 2 unclassified AL, 1 CML, 1 MDS-RA, 1 MDS-RAEB and 2 MDS-RAEBt were included. *p53* point mutation was revealed at exon 6 of codon 195 ATC (Ile)→ACC (Thr) in one unclassified AL. *AML1* point mutation at Runt domain (exon 5) was found in one MDS-RA case. *AML1* gene is recently suggested to be involved in radiation-related MDS/AML. We have shown the high incidence of *AML1* point mutation in MDS/AML among Hiroshima atomic bomb survivors. Therefore, more MDS/AML cases should be analysed to see whether this mutation is frequent in this region.

List of Contribution

A. Original Papers

1. Taniguchi, K.[*1], Kobayashi, M.[*2], Harada, H.[*3], Hiraoka, A.[*4], Tanihiro, M.[*4], Takata, N.[*4], Kimura, A. ([*1]Hiroshima College of Medical Technology, [*2]Faculty of Education, Graduate School of Education, [*3]Dept. Molecular Oncology, [*4]Division of Blood Transfusion Service, Univ. Med. Hosp.): Human neutrophil antigen-2a expression on neutrophils from healthy adults in western Japan. *Transfusion* **42**(5): 651-657, 2002. (I)

2. Fujii, T.[*], Takata, N.[*], Kimura, A. ([*]Division of Blood Transfusion Services, Univ. Med. Hosp.): Change in viral DNA and mRNA burdens in peripheral blood mononuclear cells in a patient with HIV-1 after stopping anti-retroviral treatment. *J. AIDS Research* **4**(3): 104-107, 2002. (I)

3. Ban, S.[*], Kuramoto, K.[*2,3], Oda, K.[*4], Tanaka, H., Kimura, A., Suzuki, G.[*2], Imai, T.[*5] ([*1]Dept. Radiobiology, Radiation Effects Research Foundation, Hiroshima, [*2]Dept. Clinical Studies, Radiation Effects Research Foundation, Hiroshima, [*3]Hematology Branch, NIH, Bethesda, USA, [*4]Dept. Int. Med., Hiroshima City Hosp., [*5]Frontier Research Center, National Institute of Radiological Sciences, Chiba): Radiosensitivity and expression of nucleotide excision repair genes in peripheral blood mononuclear cells of myelodysplastic syndrome patients. International Congress Series(eds. T. Sugahara, O. Nikaido, O. Niwa)1236, pp67-69, Elsevier Science, The Netherlands, 2002.(I)

4. Kuramoto, K.[*1], Ban, S.[*2], Oda, K.[*3], Tanaka, H., Kimura, A., Suzuki, G.[*1] ([*1]Dept. Clinical Studies, Radiation Effects Research Foundation, Hiroshima, [*2]Frontier Research Center, National Institute of Radiological Sciences, Chiba, [*3]Dept. Int. Med., Hiroshima City Hosp.): Chromosomal instability and radiosensitivity in myelodysplastic syndrome cells. *Leukemia* **16**(11): 2253-2258, 2002. (I)

5. Asou, H.[*1], Gombart A.F.[*2], Takeuchi, S.[*3], Tanaka, H., Tanioka, M.[*1], Matsui, H.[*1], Kimura, A., Inaba, T.[*1], Koeffler, H.P.[*2] ([*1]Dept. Molecular Oncology, [*2]Division of Hematology/Oncology, Cedars-Sinai Medical Center, Los Angeles, California, [*3]Dept. 3rd Internal Medicine, Kochi Medical School): Establishment of the acute myeloid leukemia cell line kasumi-6 from a patient with a dominant-negative mutation in the DNA-binding region of the *C/EBPα* gene. *Genes Chromosomes Cancer* **36**(2): 167-174, 2003. (G)(I)

6. Harada, H.[*], Harada, Y.[*], Tanaka, H., Kimura, A., Inaba, T.[*] ([*]Dept. Molecular Oncology): Implications of somatic mutations in the *AML1* gene in radiation-associated and therapy-related myelodysplastic syndrome acute myeloid leukemia. *Blood* **101**(2): 673-680, 2003. (G)(R)(I)

7. Sugiyama, K.[*1], Kurisu, K.[*1], Arita, K.[*1], Taniguchi, E.[*1], Okamura, T.[*1], Itoh, Y.[*1], Yamasaki, F.[*1], Kajiwara,Y.[*1], Ueda, H.[*2], Sakai, A. ([*1]Dept. Neurosurgery, Univ. Med. Hosp., [*2]Dept. Pediatrics, Univ. Med. Hosp.): Myelodysplastic syndrome following therapy for brain tumor -two case reports-. *Neurologia medico-chirurgica* (Tokyo) **42**(4): 170-174, 2002.

8. Fujii, T.[*], Takata, N.[*], Katsutani, S., Kimura, A. ([*]Division of Blood Transfusion Services, Univ. Med. Hosp.): Disseminated mucormycosis in an acquired immunodeficiency syndrome (AIDS) patient. *Internal Medicine* **42** (1): 129-130, 2003. (I)

9. Katayama, Y., Sakai, A., Oue, N.[*1], Asaoku H.[*2], Otsuki, T.[*3], Shimomura, T., Masuda, R.[*4], Hino, N.[*5], Takimoto, Y.[*6], Imanaka, F.[*7]., Yasui, W.[*1], Kimura, A. ([*1]Graduate School of Biomedical Sciences, [*2]Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp., [*3]Dept. Hygiene, Kawasaki Medical School,

Kurashiki, *4Division of Blood Transfusion Service, Univ. Med. Hosp., *5Dept. Int. Med., Kure Kyosai Hosp., *6Dept. Int. Med., Ohtake National Hosp., *7Dept. Int. Med., Hiroshima City Asa Hosp.): A possible role of the loss of CD27-CD70 interaction in myelomagenesis. *Br. J. Haematol.* **120**(2): 223-234, 2003. (I)

10. Sultana, T.A., Harada, H.*1, Ito, K., Tanaka, H., Kyo, T.*2, Kimura, A. (*1Dept. Molecular Oncology, *24th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp.): Expression and functional analysis of granulocyte colony-stimulating factor receptors on $CD34^{++}$ cells in patients with MDS and MDS-AML. *Br. J. Haematol.* **121**(1): 63-75, 2003. (I)

11. Zhumadilov, Zh.*1,2, Hoshi, M.*1, Kimura, A., Gusev, B.*3, Takeichi, N.*4, Zhigitaev, T.*2, Asahara, T.*5, Kamiya, K.*6 (*1International Radiation Information Center, *2Semipalatinsk State Medical Academy, *3Kazakh Research Institute for Radiation Medicine and Ecology, *4Takeichi Hiroshima Thyroid Medical Clinic, *52nd Dept. Surgery, Univ. Med. Hosp., *6Dept. Experimental Oncology): Thyroid cancer in the Semipalatinsk region of Kazakstan. *J. Hiroshima Med. Ass.* **55**(3): 196-197, 2002. (in Jap.)

12. Kuramoto, K.*1, Kimura, A., Ban, S.*2 (*1Hematology Branch, US-NIH, *2Frontier Research Center, National Institute of Radiological Sciences, Chiba): Myelodysplastic syndrome, hematologic disease with high radiation-risk. *Radiation Biology Research Communications* **37**(2): 115-133, 2002. (in Jap.)

13. Kimura, A.: Polycythemia vera. New Clinical Medicine (eds. Takaku, F., Ogata, H., Kurokawa, K., Yazaki, Y.) pp.1234-1236, Igaku-Shoin, Tokyo, 2002. (in Jap.)

14. Kimura, A.: Essential thromocythemia. New Clinical Medicine (eds. Takaku, F., Ogata, H., Kurokawa, K., Yazaki, Y.) pp.1236-1237, Igaku-Shoin, Tokyo, 2002. (in Jap.)

15. Harada, H.*1, Harada, Y.*2, Kimura, A., Inaba, T.*1 (*1Dept. Molecular Oncology, *2Division of Blood Transfusion Service, Univ. Med. Hosp.): Implications of somatic mutations in the AML1 gene in radiation-associated hematological disorders. *Radiation Biology Research Communications* **37**(3): 251-263, 2002. (in Jap.) (R)(G)

16. Kimura, A., Kamada, N.* (*Hiroshima A-bomb Survivors Relief Foundation): Synthetic medical studies on atomic bomb survivors exposed in short distances from the hypocenter. XXVII Two cases with triple cancers. *Nagasaki Igk Z.* **77**: 224-226, 2002. (in Jap.) (C)

17. Kimura, A.: Polycythemia vera. New Clinical Medicine, Compact series (eds. Takaku, F., Ogata, H., Kurokawa, K., Yazaki, Y.) pp.467-468, Igaku-Shoin, Tokyo, 2003. (in Jap.)

18. Kimura, A.: Essential thromocythemia. New Clinical Medicine, Compact series (eds. Takaku, F., Ogata, H., Kurokawa, K., Yazaki, Y.) p.468, Igaku-Shoin, Tokyo, 2003. (in Jap.)

19. Kimura, A.: Idiopathic myelofibrosis. Medical Examination of Outpatients, 3rd Edition (eds. Takaku, F., Mizoguchi, H., Yazaki, Y., Karino, S., Muto, T.) pp.816-817, Medical View, Tokyo, 2003. (in Jap.)

20. Ban, S.*1, Kuramoto, K.*2, 4, Oda, K.*3, Tanaka, H., Kimura, A., Suzuki, G.*2, Imai, T.*1 (*1Frontier Research Center, National Institute of Radiological Sciences, Chiba, *2Dept. Clinical Studies, Radiation Effects Research Foundation, *3Dept. Int. Med., Hiroshima City Hosp., *4Hematology Branch, NIH, Bethesda, USA): Radiosensitivity

and expression of nucleotide excision repair genes in peripheral blood mononuclear cells of atomic bomb survivors with myelodysplastic syndrome. *J. Hiroshima Med. Ass.* **55**(3): 216-218, 2002. (in Jap.)

21. Takeuchi, Y.*[1], Sato, K.*[2], Ohtaki, M.*[2], Hayakawa, N.*[3], Tanaka, H., Kimura, A. (*[1]Hiroshima Red Cross Blood Center, *[2]Dept. Environmetrics and Biometrics, *[3]Dept. Epidemiology): Increased risk of myelodysplastic syndrome (MDS) in atomic bomb survivors. *J. Hiroshima Med. Ass.* **55**(3): 214-215, 2002. (in Jap.) (C)

22. Tanaka, H.: -Guideline- Guideline of hematological stem cell transplantation. *J. Hiroshima Med. Ass.* **55**(10): 781-786, 2002. (in Jap.)

23. Shimomura, T., Fujimoto, T.*, Fujimura, K.* (*Dept. Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences): Treatment of ITP. *J. Alkaloid Study Group* **28**: 21-27, 2002. (in Jap.)

24. Noda, M.*, Katsutani, S., Takimoto, Y.*, Okita, H.* (*Dept. Int. Med., Ohtake National Hosp.): Successful treatment of refractory thrombotic thrombocytopenic purpura with splenectomy and steroid. *J. Hiroshima Med. Ass.* **55**(7): 574-577, 2002. (in Jap.)

B. Meeting Presentations

5/26～30

1. Kimura, A., Kuramoto, K., Ban, S.* (*Frontier Research Center, Institute of Radiological Sciences, Chiba): Radiosensitivity and expression of nucleotide excision repair genes in myelodysplastic syndrome (MDS). 26th International Congress of Internal Medicine, Kyoto, 2002.

6/2

2. Kimura, A., Kamada, N.* (*Hiroshima A-bomb Survivors Relief Foundation): Synthetic medical studies on atomic bomb survivors exposed in short distances from the hypocenter. XXVII Two cases with triple cancers. 43rd Annual Meeting of Late Effects of Atomic Bomb, Hiroshima, 2001. (Abstracts 23, 2002.)

6/8

3. Niimi, H., Hyodo, H., Imagawa, J., Katayama, Y., Shimomura, T., Tanaka, H., Kimura, A., Oguma, N.* (*Hiroshima Park Hill Hosp.): A case of CML crisis with hypercalcemia treated by STI571. 86th Chugoku Meeting of the Japanese Society of Internal Medicine, Yonago, 2002.

4. Takata, N.*, Fujii, T.*, Kimura, A. (*Division of Blood Transfusion Service, Univ. Med. Hosp.): Analysis of HIV infected cases in Hiroshima University Hospital. 86th Chugoku Meeting of the Japanese Society of Internal Medicine, Yonago, 2002.

6/15

5. Shimomura, T., Fujimoto, T.*, Fujimura, K.* (*Dept. Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences): Treatment of ITP.「Workshop-Basics and Practices of ITP」28th Meeting of Alkaloid Study Group, Osaka, 2002. (Abstract 16, 2002)

7/6

6. Hyodo, H.: A longterm treatment of specific tyrosine kinase inhibitor, gleevec. Meeting on New Target Therapy for

CML, Okayama, 2002.

8/24～28

7. Harada, H.[*1], Harada, Y.[*2], Tanaka, H., Kimura, A. ([*1]Dept. Molecular Oncology, [*2]Division of Blood Transfusion Service, Univ. Med. Hosp.): Implications of somatic mutations in the AML1 gene in radiation-associated and therapy-related myelodysplastic syndrome/acute myeloid leukemia. 29th World Congress of the Intenational Society of Hematology, Seoul, Korea, 2002. (G)(R)

8/24～29

8. Watanabe, S., Kimura, A., Tolstaya, E.V., Koto, M.: Military and disaster. XII World Congress of Psychiatry, Yokohama, 2002. (Abstracts 1: 260, 2002.)

8/31

9. Katayama, Y., Sakai, A., Okikawa, Y., Oue, N.[*1], Masuda, R.[*2], Kimura, A. ([*1]Graduate School of Biomedical Sciences, [*2]Division of Blood Transfusion Service, Univ. Med. Hosp.): Change of gene expression induced by cyclin D1 overexpression in myeloma cells. 5th Hiroshima Conference of Myeloma, Hiroshima, 2002.

10. Okikawa, Y., Takimoto, Y.[*1], Noda, M.[*1], Katayama, Y., Sakai, A., Fujimura, K.[*2], Okita, H.[*1], Kimura, A. ([*1]Dept. Int. Med., Ohtake National Hosp., [*2]Dept. Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences): Two cases of refractory multiple myeloma suspected the transformation into non-producing type during the therapy by thalidomide. 5th Hiroshima Conference of Myeloma, Hiroshima, 2002.

9/12～13

11. Tanaka, H., Ito, K., Kimura, A.: Anti-proliferative effect of interferon and irradiation on Daudi cells. 64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 140, 2002.) (R)(G)

12. Tanaka, H., Ito, K., Kimura, A.: Establishment of interferon-resistant Daudi cell line and analysis of cell cycle. 64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 198, 2002.) (G)

13. Shimomura, T., Katsutani, S., Fujimoto, T.[*], Fujimura, K.[*], Kimura, A. ([*]Dept. Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences): Detection of T cell proliferation to platelets using antigen delivery system. 64th General Meeting of the Japan Society of Hematology, Yokohama, 2002.(*Jpn J. Clin. Hematol.* **43**(8): 201, 2002.) (R)(G)

14. Sakai, A., Katayama, Y., Shimomura, T., Asaoku, H.[*1], Hino, N.[*2], Imanaka, F.[*3], Takimoto, Y.[*4], Masuda, R.[*5], Otsuki, T.[*6], Oue, N.[*7], Yasui, W.[*7], Kimura, A. ([*1]4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp., [*2]Dept. Int. Med., Kure Kyosai Hosp., [*3]Dept. Int. Med., Hiroshima City Asa Hosp., [*4]Dept. Int. Med., Ohtake National Hosp., [*5]Division of Blood Transfusion Service, Univ. Med. Hosp., [*6]Dept. Hygine, Kawasaki Med. School, Kurashiki, [*7]Graduate School of Biomedical Sciences): A possible role of the loss of CD27-CD70 interaction in myelomagenesis. 64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 141, 2002.)

15. Katsutani, S., Shimomura, T., Fujimoto, T.[*], Fujimura, K.[*], Kimura, A. ([*]Dept. Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences): Isolation of platelet-binding recombinant phage antibody from patient

with ITP. 64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43** (8): 201, 2002.)

16. Katayama, Y., Sakai, A., Okikawa, K., Asaoku, H.*1, Sasaki, A.*1, Imanaka, F.*2, Tsujimoto, T.*2, Masuda, R.*3, Otsuki, T.*4, Oue, N.*5, Yasui, W.*5, Kimura, A. (*1 4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp., *2 Dept. Int. Med., Hiroshima City Asa Hosp., *3 Division of Blood Transfusion Service, Univ. Med. Hosp., *4 Dept. Hygine, Kawasaki Med. School, Kurashiki, *5 Graduate School of Biomedical Sciences): Gene alterations induced by cyclin D1 overexpression in multiple myeloma. 64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 141, 2002.)

17. Niimi, H., Tanaka, H., Ito, K., Kyo, T.*, Kimura, A.(*4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp.): Gene mutation analysis of TRAIL-R1, TRAIL-R2, TRAIL promoter in CML patients. 64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43** (8): 192, 2002.) (G)

18. Ito, K., Tanaka, H., Kyo, T.*1, Oda, K.*2, Kimura, A.(*1 4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp., *2 Dept. Int. Med., Hiroshima City Hosp.): Expression of Type-Ⅰ Interferon receptor on CD34-positive cells of CML patients. 64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 134, 2002.) (G)

19. Harada, H.*1, Harada, Y.*2, Tanaka, H., Kimura, A., Inaba, T.*1 (*1 Dept. Molecular Oncology, *2 Division of Blood Transfusion Service, Univ. Med. Hosp.): Implications of somatic mutations in *AML1* gene in radiation-associated and therapy-related MDS/AML.「Workshop」64th Annual Meeting of Japanese Society of Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 110, 2002.) (G)(R)

9/14～15

20. Ito, K., Tanaka, H., Kyo, T.*, Kimura, A. (*4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp.): CML with b2a3-type variant BCR/ABL mRNA.「Workshop」44th Annual Meeting of Japanese Society of Clinical Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43** (8): 678, 2002.)

21. Okikawa, Y., Takimoto, Y.*1, Noda, M.*1, Sakai, A., Katayama, Y., Kimura, A., Okita, H.*1, Fujimura, K.*2 (*1 Dept. Int. Med., Ohtake National Hosp., *2 Dept. Clinical Pharmaceutical Science, Graduate School of Biomedical Sciences): Refractory multiple myeloma suspected to transform into the non-secreted type by thalidomide. 44th Annual Meeting of Japanese Society of Clinical Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 733, 2002.)

22. Ito, T., Tanaka, H., Ito, K., Tanaka, K.*1, Kyo, T.*2, Kamada, N.*3, Kimura, A. (*1 Dept. Radiobiol., Inst. Environmental Sciences, Aomori, *2 4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp. *3 Hiroshima A-bomb Survivors Relief Foundation): Two cases of μBCR/ABL positive CML and review in our department. 44th Annual Meeting of Japanese Society of Clinical Hematology, Yokohama, 2002. (*Jpn J. Clin. Hematol.* **43**(8): 675, 2002.)

10/1～3

23. Ito, K., Tanaka, H., Kimura, A.: Expression of Type-Ⅰ Interferon receptor on CD34-positive cells of chronic myeloid leukemia patients. 61st Annual Meeting of the Japanese Cancer Association, Tokyo, 2002. (*Jpn. J. Cancer*

Res. **93**(Suppl.): 392, 2002.) (G)

24. Tanaka, H., Ito, K., Kimura, A.: Anti-proliferative effects of interferon and irradiation on Daudi cells. 61st Annual Meeting of the Japanese Cancer Association, Tokyo, 2002. (*Jpn. J. Cancer Res.* **93** (Suppl.): 394, 2002.) (R)(G)

10/16

25. Kimura, A.: Recent advance of CML and MDS research. 「Invited Lecture」Nantong Medical College, Nantong, China, 2002.

10/17

26. Shoda, T.*, Okikawa, Y., Noda, M.*, Takimoto, Y.*, Okita, H.* (*Dept. Int. Med., Ohtake National Hosp.): Cyclic neutropenia in adult patient -a case report-. 23rd Mini Meeting of Clinical Hematology of National Hospital and Sanatorium, Fukuoka, 2002.

10/28

27. Morimoto, K.*1, Nagata, K.*1, Shindo, H.*1, Hide, M.*1, Sugita, Y.*2, Katsutani, S., Sakai, A. (*1Dept. Dermatology, Univ. Med. Hosp., *2Dept. Dermatology, National Hiroshima Hosp.): A case report of the diffuse large B-cell lymphoma with bulky mass on the leg. 44th Conference of Malignant Lymphoma, Hiroshima, 2002.

28. Okikawa, Y., Katayama, Y., Sakai, A., Shimomura, T., Kimura, A.: The effect of therapy by rituximab for one year after being an sale. 44th Conference of Malignant Lymphoma, Hiroshima, 2002.

29. Sakai, A.: The therapy of FL and DLBCL in each hospital -the analysis by questionnaire-. 44th Conference of Malignant Lymphoma, Hiroshima, 2002.

11/8

30. Tanaka, H., Ito, K., Kyo, T.*, Kimura, A. (*4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp): Expression of interferon receptor on CD34-positive cells and clinical response in chronic myelogeneous leukemia. 22th Symposium of Hematopoietic Stem Cells. (G)

11/9

31. Okikawa, Y., Katayama, Y., Sakai, A., Shimomura, T., Hyodo, H., Kimura, A.: Auto-PBSCT performed in BJP type multiple myeloma with Amyloidosis. 87th Chugoku Meeting of the Japanese Society of Internal Medicine, Iwakuni, 2002.

32. Noda, M.*, Okikawa, Y., Shoda, T.*, Yamanaka, H.*, Takimoto, Y.*, Okita, H.* (*Dept. Int. Med., Ohtake National Hosp.): Efficacy of Helicobacter pylori eradication in patient with idiopathic thrombocytopenia purpura. 87th Chugoku Meeting of the Japanese Society of Internal Medicine, Iwakuni, 2002.

11/9〜10

33. Yamasaki, Y., Okita, Y., Katayama, Y., Sakai, A., Shimomura, T., Hyodo, H., Kimura, A.: Response to combination chemotherapy and anti CD20 monoclonal antibody in elderly lymphoma patient -case report-. 55th Annual Meeting of Hiroshima Medical Association, Hiroshima, 2002. (*J. Hiroshima Med. Ass.* **55**(11): 936, 2002.)

11/16

34. Katayama, Y., Sakai, A., Okikawa, Y., Oue, N.[*1], Masuda, R.[*2], Asaoku, H.[*3], Sasaki, A.[*3], Imanaka, F.[*4], Tsujimoto, T.[*4], Yasui, Y.[*1], Kimura, A. ([*1]Graduate School of Biomedical Sciences, [*2]Division of Blood Transfusion Service, Univ. Med. Hosp., [*3]4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp., [*4]Dept. Int. Med., Hiroshima City Asa Hosp.): Change of gene expression induced by cyclin D1 overexpression in myeloma cells. 27th Annual Meeting of Japan Myeloma Study Group, Chiba, 2002.(Abstracts 21, 2002.)

35. Okikawa, Y., Sakai, A., Katayama, Y., Takimoto, Y.[*1], Noda, M.[*1], Fujimura, K.[*2], Okita, H.[*1], Kimura, A. ([*1]Dept. Int. Med., Ohtake National Hosp., [*2]Dept. Clinical Pharmaceutical Sicence, Graduate School of Biomedical Sicneces): Is thalidomide effective for mature myeloma cells?. 27th Annual Meeting of Japan Myeloma Study Group, Chiba, 2002. (Abstracts 24, 2002.)

12/6～10

36. Katayama, Y., Sakai, A., Okikawa, Y., Oue, N.[*1], Asaoku, H.[*2], Sasaki, A.[*2], Imanaka, F.[*3], Tsujimoto, T.[*3], Masuda, R.[*4], Otsuki, T.[*5], Yasui, W.[*1], Kimura, A. ([*1]Graduate School of Biomedical Sciences, [*2]Dept. Int. Med., Hiroshima Red Cross Hosp., [*3]Dept. Int. Med., Hiroshima City Asa Hosp., [*4]Division of Blood Transfusion Service, Univ. Med. Hosp., [*5]Dept. Hygiene, Kawasaki Medical School, Kurashiki): Differential gene expression between myeloma cells with cyclin D1 overexpression and those without it. 44th Annual Meeting of the American Society of Hematology, Philadelphia, Pennsylvania, 2002. (*Blood* **100**(11)(Part 1): 395a, 2002.)

37. Ito, K., Tanaka, H., Kyo, T.*, Kimura, A. (*4th Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp.): Cell-surface and mRNA expressions of interferon alpha receptor 2 (IFNAR2) in CD34-positive cells are good markers of cytogenetic response to interferon in chronic myelogenous leukemia. 44th Annual Meeting of the American Society of Hematology, Philadelphia, Pennsylvania, 2002. (*Blood* **100** (11) (Part 1): 366a, 2002.) (G)

38. Hamada, M.[*1], Yakushijin, Y.[*1], Ohtsuka, M.[*1], Yasukawa, M.[*1], Fujita, S.[*1], Sakai, A., Ishimaru, F.[*2] ([*1]1st Dept. Int. Med., Ehime Univ. School of Med., Ehime, [*2]2nd Dept. Int. Med., Okayama Univ., School of Med., Okayama) : The association of survivin's expression with aurora kinase 2 and their involvement in cell survival in aggressive non-Hodgkin's lymphoma. 44th Annual Meeting of the American Society of Hematology, Philadelphia, Pennsylvania, 2002. (*Blood* **100**(11)(Part 1): 348a, 2002.)

39. Sakai, A., Katayama, Y., Oue N.[*1], Asaoku, H.[*2], Otsuki, T.[*3], Shimomura, T., Masuda, R.[*4], Hino, N.[*5], Takimoto, Y.[*6], Imanaka, F.[*7], Yasui, W.[*1], Kimura, A. ([*1]Graduate School of Biomedical Sciences, [*2]Dept. Int. Med., Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp., [*3]Dept. Hygiene, Kawasaki Medical School, Kurashiki, [*4]Division of Blood Transfusion Service, Med. Univ. Hosp., [*5]Dept. Int. Med., Kure Kyosai Hosp., Kure, [*6]Dept. Int. Med., Ohtake National Hosp., [*7]Dept. Int. Med., Hiroshima City Asa Hosp.): A possible role of the loss of CD27-CD70 interaction in myelomagenesis. 44th Annual Meeting of the American Society of Hematology, Philadelphia, Pennsylvania, 2002. (*Blood* **100**(11)(Part 2): 368b, 2002.)

3/1

40. Sultana, T., Harada, H.[*1], Ito, K., Tanaka, H., Kyo, T.[*2], Kimura, A.([*1]Dept. Molecular Oncology, [*2]Hiroshima Red Cross Hosp. & Atomic-bomb Survivors Hosp.): Expression and functional analysis of granulocyte colony-stimulating factor receptors on $CD34^{++}$ cells in patients with MDS and MDS-AML. 42nd Chugoku-Shikoku

Meeting of the Japan Society of Hematology, Hiroshima, 2003.（G）

（R）,（A）,（G）and（C）are reports on the study using Radiation Experiments, Animal Experiments, Gene Technology Facilities and Studies established at the International Radiation Information Center, respectively.（I）indicates reports printed in the scientific journals listed in Current Contents.