

CURRICULUM VITAE

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Education:
1975-1981 Medical School, Osaka University
 Awarded the degree of MD
1988 Awarded the degree of PhD

Professional experience:
1981-1982 Intern, Osaka University Medical School
1983-1984 Doctor of Internal Medicine, Sakai Hospital

Research experience:
1984-1988 Instructor at the Department of Pathology
 Biomedical Research Institute,
 Osaka University Medical School
1989-1990 Visiting scientist,
 Differentiation Programme, EMBL
1990-1995 Assistant professor at Department of Medical Chemistry
 Faculty of Medicine, Kyoto University
 working on molecular mechanisms of hematopoiesis
1995-2004 Professor, Department of Molecular Cell Biology,
 Research Institute for Microbial Diseases, Osaka University
2004-2022 Professor, Department of Pathology
 Faculty of Frontier Biosciences and Medical School
 Osaka University
2014-2016 Dean, Faculty of Frontier Biosciences, Osaka University
2022- Emeritus Professor, Department of Pathology
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Award
2012 Medical Award of The Japan Medical Association

Toru Nakano is a Professor of the Department of Pathology, Osaka University Medical School, Osaka Japan. He received his M.D. from Osaka University Medical School in 1981. He started his scientific career by transplantation experiments of mast cells and hematopoietic stem cells. From 1989, he joined to European Molecular Biology Laboratory (EMBL) as a visiting scientist and was involved in the viral leukemogenesis of chicken. As a staff scientist, he next went on to work, first as an assistant professor (1990) and then as a lecturer (1991) at the Faculty of Medicine, Kyoto University, on a project studying the molecular mechanisms of hematopoiesis using his unique *in vitro* differentiation induction method from mouse ES cells. He took a professor position at the Research Institute for Microbial Diseases, Osaka University in 1995 and started his study of germ cell development. He was appointed as a professor at the Graduate School of Frontier Biosciences and Medical School, Osaka University in 2004. In 2022, he retired from his academic position. His major interest is “How various kinds of cells are produced from single totipotent cells, zygotes?” Based on the interest, he has been studying epigenetic modification, especially DNA methylation, in spermatogenesis and in early embryogenesis. To be more precisely, his recent and major scientific themes are *de novo* DNA methylation of male germ cells by germ cell specific small RNA, pi-RNA (piwi interacting RNA) and the regulation of DNA methylation in early embryogenesis.

PUBLICATIONS

1. Sonoda T, Hayashi C, Kitamura Y, Nakano T, Bessho M, Hirashima K, Miyazaki E, Hara H. Poor response of W/W^x mice to a grafted neutrophilia inducing, colony stimulating factor producing tumor.
Exp Hematol, 12:850-855, 1984
2. Sonoda T, Hayashi C, Seike H, Nakayama H, Terasaka K, Morioka T, Nakano T, Kitamura Y. Extensive proliferation of subsequently injected marrow cells in parental to F1 hematopoietic chimeras that restored normal stem cell concentration after initial transplantation.
Exp Hematol, 13:143-150, 1985
3. Sonoda T, Hayashi C, Seike H, Nakayama H, Terasaka K, Morioka T, Nakano T, Kitamura Y. Mast cell precursors in the skin of mouse embryos and their deficiency in embryos of *Sl/Sld* genotype.
Dev Biol, 109:234-241, 1985
4. Kitamura Y, Sonoda T, Nakano T, Nakayama H, Kitamura Y. Differentiation processes of connective tissue mast cells in living mice.
Int Arch Allergy appl Immunol, 77:144-150, 1985
5. Yokoyama M, Tomoi M, Taguchi T, Nakano T, Asai H, Ono T, Kitamura Y. Fatal antral ulcer in conventionally fed W/W^v mutant mice given indomethacin by injection.
Am J Pathol, 119:367-375, 1985
6. Nakano T, Sonoda T, Hayashi C, Yamatodani A, Kanayama Y, Yamamura T, Asai H, Yonezawa T, Kitamura Y, Galli S J. Fate of bone marrow derived cultured mast cells after intracutaneous, intraperitoneal and intravenous transfer into mast cell-deficient W/W^v mice; evidence that cultured mast cells can give rise to both connective tissue type and mucosal mast cells.
J Exp Med, 162:1025-1043, 1985
7. Kitamura Y, Nakano T, Kanakura Y. Transdifferentiation between mast cell subpopulations.
Dev Growth Differ, 28:321-325, 1986
8. Kitamura Y, Sonoda T, Nakano T, Kanayama Y. Probable dedifferentiation of mast cells in mouse connective tissues.
Curr Top Dev Biol, 20:325-332, 1986
9. Kobayashi T, Nakano T, Nakahata T, Asai H, Yagi Y, Tsuji K, Komiyama A, Akabane T, Kojima S, Kitamura Y. Formation of mast cell colonies in methylcellulose by mouse peritoneal cells and differentiation of these cloned cells in both the skin and the gastric mucosa of W/W^v mice; evidence that a common precursor can give rise to both "connective tissue type" and "mucosal" mast cells.
J Immunol, 136:1378-1384, 1986

10. Kitamura Y, Nakano T, Sonoda T, Kanayama Y, Yamamura T, Asai H.
Probable transdifferentiation between connective tissue and mucosal mast cells.
in *Mast Cell Differentiation and Heterogeneity*: A D Befus, Raven Press, pp. 135-140, 1986
11. Sonoda S, Sonoda T, Nakano T, Kanayama Y, Kanakura Y, Asai H, Yonezawa T, Kitamura Y.
Development of mucosal mast cells after injection of a single connective tissue type mast cells in the stomach mucosa of genetically mast cell deficient *W/W^v* mice.
J Immunol, 137:1319-1322
12. Sonoda S, Nakano T, Kanakura Y, Sonoda T, Asai H, Kitamura Y.
Hybrid resistance to parental mast cell precursors in the skin of (WB X C57BL/6)F1 *W/W^v* mice.
J Immunol, 137:2152-2155, 1986
13. Kitamura Y, Nakano T, Kanakura Y, Matsuda H.
Factors influencing mast cell differentiation.
in the *Proceedings of the XII International Congress of Allergy and Clinical Immunology*.
Mosby, pp.154-158, 1986
14. Nakano T, Kitamura Y, Asai H, Kitamura Y.
Changing processes from bone marrow derived cultured mast cells to connective tissue type mast cells in the peritoneal cavity of mast cell deficient *W/W^v* mice: association of proliferation arrest and differentiation.
J Immunol, 138:544-549, 1987
15. Hamaguchi Y, Kanakura Y, Fujita J, Takeda S, Nakano T, Tarui S, Honjo T, Kitamura Y.
Interleukin 4 as an essential factor for *in vitro* clonal growth of murine connective tissue type mast cells.
J Exp Med, 165:268-273, 1987
16. Otsu K, Nakano T, Kanakura Y, Asai H, Katz H R, Austen K F, Stevens R L, Galli S J, Kitamura Y.
Phenotypic changes of bone marrow derived mast cells after intraperitoneal transfer into *W/W^v* mice that are genetically deficient in mast cells.
J Exp Med, 165:615-627, 1987
17. Matsuda H, Nakano T, Kiso Y, Kitamura Y.
Normalization of anti-tick response of mast cell deficient *W/W^v* mice by intracutaneous injection of cultured mast cells.
J Parasitol, 73:155-160, 1987
18. Nakano T, Kanakura Y, Nakahata T, Matsuda H, Kitamura Y.
Genetically mast cell deficient *W/W^v* mice as a tool for studies of differentiation and function of mast cells.
Fed proc, 46:1920-1923, 1987
19. Kitamura Y, Kanakura Y, Sonoda S, Asai H, Nakano T.

Mutual phenotypic changes between connective tissue type and mucosal mast cells.
Int Arch Allergy appl Immunol, 82:244-248, 1987

20. Kitamura Y, Kanakura Y, Sonoda S, Asai H, Nakano T.
Differentiation and transdifferentiation of mast cells; a unique member of the hematopoietic cell family.
Int J Cell Clon, 5:108-121, 1987
21. Kanakura Y, Sonoda S, Nakano T, Fujita J, Asai H, Kuriu A, Kitamura Y.
Formation of mast cell colonies in methylcellulose by mouse skin cells and development of mucosal like mast cells from the cloned cells in gastric mucosa of *W/W^v* mice.
Amer J Pathol, 129:1758-1763, 1987
22. Nakano T, Waki N, Asai H, Kitamura Y.
Long term monoclonal reconstitution of erythropoiesis in genetically anemic *W/W^v* mice by injection of 5-fluorouracil treated bone marrow cells of *Pgk-1^b/Pgk-1^a* mice.
Blood, 70:1758-1763, 1987
23. Nakano T, Waki N, Yoshiyasu S, Kanamaru A, Kitamura Y.
The cause of anemia in mutant mice of *Sl/Sl^t* genotype; hypoplasia in bone marrow and restricted hyperplasia in spleen.
Exp Hematol, 16:117-121, 1988
24. Fujita J, Nakayama H, Onoue H, Kanakura Y, Nakano T, Asai H, Takeda S, Honjo T, Kitamura Y.
Fibroblast dependent growth of mouse mast cells *in vitro*: duplication of mast cell depletion in mutant mice of *W/W^v* genotype.
J Cell Physiol, 134:78-83, 1988
25. Kanakura Y, Kuriu A, Waki N, Nakano T, Asai H, Yonezawa T, Kitamura Y.
Changes in numbers and types of mast cell colony forming cells in the peritoneal cavity of mice after injection of distilled water: evidence that mast cell suppress differentiation of bone marrow derived precursors.
Blood, 71:573-580, 1988
26. Yamamura T, Nakano T, Fukuzumi T, Waki N, Asai H, Yoshikawa K, Kitamura Y.
Electron microscopical bimorphism of mast cells which appeared in the skin of genetically mast cell deficient *W/W^v* mice after injection of bone marrow derived cultured mast cells.
J Inv Dermatol, 91:269-273, 1988
27. Kanakura Y, Thompson H, Nakano T, Yamamura T, Asai H, Kitamura Y, Metcalfe D D, Galli S J.
Multiple bidirectional alterations of phenotype and changes in proliferative potential during the *in vitro* and *in vivo* passage of clonal mast cell populations derived from mouse peritoneal mast cells.
Blood, 72:877-885, 1988
28. Nakano T, Waki N, Kanakura Y, Fujita J, Asai H, Kitamura Y.

Hybrid resistance to parental bone marrow derived cultured mast cells in the skin but not in the peritoneal cavity of (WB X C57BL/6)F₁-W/W^v mice.

Exp Hematol, 16:908-911, 1988

29. Takeda S, Hamaguchi Y, Zong S Q, Kuze K, Honjo T, Ishimoto M, Nakano T, Kitamura Y. Introduction and expression of the interleukin 2 receptor (Tac) gene in hematopoietic stem cells with retrovirus vectors.
Growth Factors, 1:59-66, 1988
30. Nakano T, Waki N, Asai H, Kitamura Y. Effect of 5-fluorouracil on "primitive" hematopoietic stem cells that reconstitute whole erythropoiesis of genetically anemic W/W^v mice.
Blood, 73:425-430, 1989
31. Nakano T, Waki N, Asai H, Kitamura Y. Lymphoid differentiation of the hematopoietic stem cell that reconstitutes total erythropoiesis of a genetically anemic W/W^v mouse.
Blood, 73:1175-1179, 1989
32. Matsuda H, Kawakita K, Kiso Y, Nakano T, Kitamura Y. Substance P induces granulocyte infiltration through degranulation of mast cells.
J Immunol, 142:927-931, 1989
33. Nishimura M, Inoue M, Nakano T, Nishikawa T, Miyamoto M, Kobayashi T, Kitamura Y. Beige rat: a new animal model of Chediak-Higashi syndrome.
Blood, 74:270-273, 1989
34. Nakano T, Waki N, Asai H, Kitamura Y. Different repopulation profile between erythroid and nonerythroid progenitor cells in genetically anemic W/W^v mice after bone marrow transplantation.
Blood, 74:1552-1556, 1989
35. Waki N, Kitamura Y, Kanakura Y, Asai H, Nakano T. Intraperitoneally injected cultured mast cells suppress recruitment and differentiation of bone marrow-derived mast cell precursors in the peritoneal cavity of W/W^v mice.
Exp Hematol, 18:243-247, 1990
36. Introna M, Golay J, Frampton J, Nakano T, Ness S A, Graf T. Mutations in v-myb alter the differentiation of myelomonocytic cells transformed by the oncogene.
Cell, 63:1287-1297, 1990
37. Nakano T, Kitamura Y. Anemic W/W^v mouse. in *Genetically Based Immunological Disorders in Inbred Mice*: B Rihova CRC Press, pp233-249, 1991
38. Nakano T, Graf T.

Goose-type lysozyme gene of the chicken; sequence, genomic organization and expression reveals major difference to chicken-type lysozyme gene.

Biochim Biophys Acta, 1090:273-276, 1991

39. Aoki T, Tashiro K, Miyatake S, Nakano T, Oda Y, Kikuchi H, Honjo T.
Expression of the Rag-2 gene in murine central nervous system tumor cell lines.
BBRC, 27:151-158, 1991
40. Nakano T, Graf T.
Identification of genes differentially expressed in two types of *v-myb*-transformed avian myelomonocytic cells.
Oncogene, 7:527-534, 1992
41. Aoki T, Tashiro K, Miyatake S, Kinashi T, Nakano T, Oda Y, Kikuchi H, Honjo T.
Expression of murine interleukin 7 in a murine glioma cell line results in reduced tumorigenicity in vivo.
Proc Natl Acad Sci U.S.A., 89:3850-3854, 1992
42. Tashiro K, Tada H, Shirozu M, Heilker R, Nakano T, Honjo T.
Signal sequence trap: A cloning strategy for secreted proteins and type I transmembrane proteins.
Science, 261:600-603, 1993
43. Nakano T, Kodama H, Honjo T.
Generation of lymphohematopoietic cells from embryonic stem cells in culture.
Science, 265:1098-1101, 1994
44. Nakano T.
Lymphohematopoietic development of embryonic stem cells *in vitro*.
Sem Immunol, 7:197-203, 1995
45. Shirozu M, Nakano T, Inazawa J, Tashiro K, Tada H, Honjo T.
Structure and chromosomal localization of the human stromal cell-derived factor 1 (SDF1).
Genomics, 28:495-500, 1995
46. Oka C, Nakano T (equal contribution), Wakeham A, de la Pompa JL, Mori C, Sakai T, Okazaki S, Kawaichi M, Shiota K, Mak TW, Honjo T.
Disruption of the mouse RBP-Jκ gene results in early embryonic death.
Development, 121: 3291 - 3301, 1995
47. Sakai T, Furukawa T, Iwanari H, Oka C, Nakano T, Kawasaki M, Honjo T.
Loss of Immunostaining of the RBP-Jκ transcription factor upon F9 cell differentiation induced by retinoic acid.
J Biochem, 118:621-628, 1995
48. Nakamura T, Tashiro K, Nazarea M, Nakano T, Sasayama S, Honjo T.
The murine lymphotoxin-κ receptor cDNA; isolation by the signal sequence trap and chromosomal mapping.
Genomics, 30: 312-319, 1995
49. Nishimura H, Agata Y, Kawasaki A, Sato M, Minato N, Yagita H, Nakano T, Honjo T.

- Developmentally regulated expression of the PD-1 protein on the surface of double negative (CD4⁻, CD8⁻) thymocytes.
Int Immunol, 8:773-780, 1996
50. Nakano T, Kodama H, Honjo T.
In vitro development of primitive and definitive erythrocytes from different precursors.
Science, 272:722-724, 1996
51. Nakano T, Era T, Kodama H, Honjo T.
Development of Blood Cells from Mouse Embryonic Stem Cells in Culture.
in *Proc. International Symposium of Bone Marrow Transplantation*:
S. Ikehara et al., Springer-Verlag Tokyo, pp 9-21, 1996
52. Tashiro K, Nakano T, Honjo T.
Signal sequence trap: expression cloning methods for secreted proteins and type 1 membrane proteins.
Methods in Molecular Biology, 69:203-219, 1996
53. Hamada T, Nakano T, Inazawa J, Tashiro K, Shirozu M, Tada H, Nakamura T, Honjo T.
Isolation and characterization of a novel soluble factor gene: a contributonal trial for resoution of intercellular signal transduction.
Gene, 176:211-214, 1996
54. Shirozu M, Tada H, Tashiro K, Nakamura T, Lopez N, Nazarea M, Hamada T, Sato T, Nakano T, Honjo T.
Isolation and characterization of novel secreted proteins or membrane proteins by using signal sequence trap method.
Genomics, 37:273-280, 1996
55. Nakano T.
In vitro development of hematopoietic system from mouse embryonic stem cells: a new approach for embryonic hematopoiesis.
Int J Hematol, 65:1-8, 1996
56. Era T, Takahashi T, Sakai K, Kawamura K, Nakano T.
Thrombopoietin enhances proliferation and differentiation of murine yolk sac erythroid progenitors.
Blood, 89:1207-1213, 1997
57. Aoki T, Koike T, Nakano T, Shibahara K, Kondo S, Kikuchi H, Honjo T.
Induction of Bip mRNA upon programmed cell death of differentiated PC12 cells as well as rat sympathetic neurons.
J Biochem, 121:122-127, 1997
58. J L de la Pompa, Wakeham A, Correia K M, Samper E, Brown S, Aguilera R J, Nakano T, Honjo T, Mak T W, Rossant J, Conlon R A.
Conservation of the Notch signalling pathway in mammalian neurogenesis.
Development, 124:1139-1148, 1997
59. Aoki T, Koike T, Nakano T, Shibahara K, Nishimura H, Kikuchi H, Honjo T.

Rat TAFII₃₁ gene is induced upon programmed cell death in differentiated PC12 cells deprived of NGF.

BBRC, 234:230-234, 1997

60. Nakano T, Era T, Takahashi T, Honjo T.
Development of erythroid cells from mouse embryonic stem cells in culture: potential use for erythroid transcription factor study.
Leukemia Suppl, 3:496-500, 1997
61. Carlyle J R, Michie A M, Furlonger C, Nakano T, Lenardo M J, Paige C J, Zúñiga-Pflücker J-C.
Identification of a novel developmental stage marking lineage commitment of progenitor thymocytes.
J Exp Med, 186:173-182, 1997
62. Yamane T, Kunisada T, Yamazaki H, Era T, Nakano T, Hayashi S-I.
Development of osteoclasts from embryonic stem cells through a pathway that is c-Fms, but not c-Kit dependent.
Blood, 90:3516-3523, 1997
63. Nishimura H, Minato N, Nakano T, Honjo T.
Immunological studies on PD-1-deficient mice: implication of PD-1 as a negative regulator for B cell responses.
Int Immunol, 10:1563-1572, 1998
64. Suwabe N, Takahashi S, Nakano T, Yamamoto M.
GATA-1 regulates growth and differentiation of definitive erythroid lineage cells during in vitro ES cell differentiation.
Blood, 92: 4108-4118, 1998
65. Motoyama N, Kimura T, Takahashi T, Watanabe T, Nakano T.
bcl-x prevents apoptotic cell death of both primitive and definitive erythrocytes at the end of maturation.
J Exp Med, 189: 1691-1698, 1999
66. Lopez N D, Kinoshita A, Taniwaki M, Tada H, Shirozu M, Nakano T, Tashiro K, Honjo T.
Isoform specific expression of the SDR-1 protein, and in subregions of adult rodent brain.
Biomed Res, 20: 43-49, 1999
67. Cho S K, Webber T D, Carlyle J R, Nakano T, Lewis S M, Zúñiga-Pflücker J-C.
Functional characterization of B lymphocytes generated in vitro from embryonic stem cells.
Proc Natl Acad Sci USA, 96: 9797-9802, 1999
68. Kimura T, Yomogida K, Iwai N, Kato Y, Nakano T.
Molecular cloning and genomic organization of mouse homologue of *Drosophila germ cell-less* and its expression in germ lineage cells
Biochem Biophys Res Commun, 262:223-30, 1999
69. Murakami Y, Kinoshita T, Maeda Y, Nakano T, Kosaka H, Takeda J.
Different roles of glycosylphosphatidylinositol in various hematopoietic cells as revealed by model mice of paroxysmal nocturnal hemoglobinuria.

Blood, 94: 2963-2970, 1999

70. Era T, Takagi Y, Takahashi T, Bories J C, Nakano T. Characterization of hematopoietic lineage specific gene expression by ES cell *in vitro* differentiation induction system.
Blood, 95: 870-878, 2000
71. Takahashi T, Suwabe N, Dai P, Yamamoto M, Ishii S, Nakano T. Inhibitory interaction of c-Myb and GATA-1 via transcriptional co-activator CBP.
Oncogene, 19:134-40, 2000
72. Matsumoto K, Yasui K, Yamashita N, Horie Y, Yamada T, Tani Y, Shibata H, Nakano T. *In Vitro* proliferation potential of AC133 positive cells in peripheral blood.
Stem Cells, 18:196-203, 2000
73. Kimura T, Sonoda Y, Iwai N, Satoh M, Yamaguchi-Tsukio M, Izui T, Suda M, Sasaki K, Nakano T. Proliferation and cell death of embryonic primitive erythrocytes.
Exp Hematol, 28:635-641, 2000
74. Kato K, Morrison A M, Nakano T, Tashiro K, Honjo T. ESOP-1, a secreted protein expressed in the hematopoietic, nervous and reproductive systems of embryonic and adult mouse.
Blood, 96:362-364, 2000
75. Yamane T, Kunisada T, Yamazaki H, Nakano T, Orkin S H, Hayashi S. Sequential requirements for SCL/tal-1, GATA-2, M-CSF, and osteoclast differentiation factor/osteoprotegerin ligand in osteoclast development.
Exp Hematol, 28:833-840, 2000
76. Nakano T, Suda T. Developing our understanding of the hematopoietic system.
Int J Hematol, 71:294-6, 2000
77. Suzuki A, Nakano T. Hematopoietic development from ES cells
Int J Hematol, 73:1-5, 2001
78. Hemmi H, Okuyama H, Yamane T, Nishikawa S-I, Nakano T, Yamazaki H, Kunisada T, Hayashi S-I. Temporal and spatial localization of osteoclasts in colonies from embryonic stem cells.
Biochem Biophys Res Commun, 280:526-534, 2001
79. Sato M, Nakano T. Embryonic stem cell.
Internal Medicine, 40:195-200, 2001
80. Iwai N, Kitajima K, Sakai K, Kimura T, Nakano T. Alteration of cell adhesion and cell cycle properties of ES cells by an inducible dominant interfering Myb mutant.
Oncogene, 20:1425-34, 2001

81. Suzuki A, Tsukio-Yamaguchi M, Ohteki T, Sasaki T, Kaisho T, Kimura Y, Yoshida R, Wakeham A, Higuchi T, Fukumoto M, Tsubata T, Ohashi P, Koyasu S, Penninger J M, Nakano T. (*corresponding author*), Mak T W.
T-cell specific loss of PTEN leads to defects in central and peripheral tolerance.
Immunity, 14:523-34, 2001
82. Kuramochi-Miyagawa S, Kimura T, Yomogida K, Kuroiwa A, Tadokoro Y, Fujita Y, Sato M, Matsuda Y, Nakano T.
Two mouse piwi-related genes: *miwi* and *mili*.
Mech Dev, 108:121-33, 2001
83. Shirane M, Sawa H, Kobayashi Y, Nakano T, Kitajima K, Shinkai Y, Nagashima K, Negishi N.
Deficiency of phospholipase C-γ1 impairs renal development and hematopoiesis.
Development, 128:5173-80, 2001
84. Sato M, Kimura T, Kurokawa K, Fujita Y, Abe K, Masuhara M, Yasunaga T, Abe R, Yamamoto N, Nakano T.
Identification of PGC7, a new gene expressed specifically in preimplantation embryos and germ cells.
Mech Dev, 113, 91-4, 2002
85. Yamamoto H, Kihara-Negishi F, Yamada T, Suzuki M, Nakano T, Oikawa T.
Interaction between the hematopoietic Ets transcription factor Spi-B and the coactivator CREB-binding protein associated with negative cross-talk with c-Myb.
Cell Growth Differ 13:69-75, 2002
86. Tanigaki T, Han H, Yamamoto N, Tashiro K, Ikegawa M, Kuroda K, Nakano T, Honjo T.
Notch/RBPJ signaling is involved in cell fate determination of Marginal Zone B cells.
Nature Immunol, 3:443-50, 2002
87. Kitajima K, Masuhara M, Era T, Enver T, Nakano T.
GATA-2 and GATA-2/ER display opposing activities in the development and differentiation of blood progenitors.
EMBO J, 21:3060-69, 2002
88. Lian RH, Maeda M, Lohwasser S, Delcommenne M, Nakano T, Vance RE, Raulet DH, Takei F
Orderly and nonstochastic acquisition of CD94/NKG2 receptors by developing NK cells derived from embryonic stem cells in vitro
J Immunol, 168:4980-7, 2002
89. Eto K, Murphy R, Kerrigan SW, Bertoni A, Stuhlmann H, Nakano T, Leavitt AD, Shattil SJ.
Megakaryocytes derived from embryonic stem cells implicate CalDAG-GEFI in integrin signaling.
Proc. Natl. Acad. Sci. USA, 99:12819-24, 2002
90. Kimura T, Ito C, Watanabe S, Takahashi T, Ikawa M, Yomogida K, Ikeuchi M, Asada N, Fujita Y, Matsumiya K, Okuyama A, Okabe M, Toshimori K, Nakano T.
Mouse Germ Cell-Less as an essential component for nuclear integrity

Mol Cell Biol, 23: 1304-15, 2003

91. Suzuki A, Itami A, Ohishi M, Inoue T, Komazawa N, Senoo H, Sasaki T, Takeda J, Manabe M, Mak TW, Nakano T.
Keratinocyte-specific Pten deficiency results in epidermal hyperplasia, accelerated hair follicle morphogenesis and tumor formation
Cancer Res, 63:674-81, 2003
92. Suzuki A, Kaisho T, Ohishi M, Tsukio-Yamaguchi M, Tsubata T, Koni PA, Sasaki T, Mak TW, Nakano T.
Critical roles of Pten in B cell homeostasis and immunoglobulin class switch recombination
J Exp Med, 197: 657-67, 2003
93. Kimura T, Suzuki A, Fujita Y, Yomogida K, Lomeli H, Asada N, Ikeuchi M, Nagy A, Mak TW, Nakano T.
Conditional loss of PTEN leads to testicular teratoma and enhances embryonic germ cell production
Development, 130: 1691-1700, 2003
94. Yasui K, Matsumoto K, Hirayama F, Tani Y, and Nakano T.
Differences between peripheral and cord blood in the kinetics of lineage-restricted hematopoietic cells
Implications for delayed platelet recovery following cord blood transplantation
Stem cells, 21:143-51, 2003
95. Kishimoto H, Hamada K, Saunders M, Sasaki T, Nakano T, Mak TW and Suzuki A.
Physiological functions of PTEN in various tissues: analysis of the tissue specific PTEN mutant mice
Cell Structure and Function, 28:11-21, 2003
96. Ueno H, Sakita-Ishikawa M, Morikawa Y, Nakano T, Kitamura T, Saito M.
A stromal cell-derived membrane protein that supports hematopoietic stem cells
Nature Immunol, 4:457-63, 2003
97. Kitajima K, Tanaka M, Jie Z, Sakai-Ogawa E, Nakano T.
In vitro differentiation of mouse embryonic stem cells to hematopoietic cells on an OP9 stromal cell monolayer
Methods Enzymol, 365:72-82, 2003
98. Eto K, Lewitt AL, Nakano T, Shattil SJ.
Development and analysis of megakaryocytes from murine embryonic stem cells
Methods Enzymol, 365:142-157, 2003
99. Masuhara M, Nagao K, Nishikawa M, Kimura T, Nakano T
Enhanced degradation of MDM2 by a nuclear envelope component, mouse germ cell less
Biochem Biophys Res Commun, 308: 927-32, 2003
100. Nakano T
Hematopoietic stem cells: generation and manipulation
Trends Immunol, 24: 589-594, 2003

101. Payer B, Saitou M, Barton SC, Thresher R, Dixon JPC, Zahn D, Colledge WH, Carlton MBL, Nakano T, Surani MA
Stella is a maternal effect gene required for normal early development in mice
Cur Biol, 13: 2110-2117, 2003
102. Okamura D, Kimura T, Nakano T, Matsui Y
Cadherin-mediated cell interaction regulate germ cell determination in mice
Development, 130: 6423-6430, 2003
103. Kuramochi-Miyagawa K, Kimura T, Ijiri T, Asada N, Fujita Y, Ikawa M, Isobe T, Iwai N, Okabe M, Deng W, Lin H, Matsuda Y, Nakano T
mili, a mammalian member of *piwi* family gene, is essential for spermatogenesis
Development, 131:839-849, 2004
104. Suzuki A, Sasaki T, Mak TW, Nakano T
Functional analysis of the tumour suppressor gene PTEN in murine B cells and keratinocytes
Biochemical Journal, 32: 362-365, 2004
105. Horie Y, Suzuki A, Kataoka E, Sasaki T, Hamada K, Sasaki J, Mizuno K, Hasegawa G, Kishimoto H, Iizuka M, Naito M, Enomoto K, Watanabe S, Mak TW, Nakano T
Hepatocyte-specific Pten deficiency results in steatohepatitis and hepatocellular carcinomas
J Clin Invest, 113: 1774-1783, 2004
106. Tsuzuki S, Kitajima K, Nakano T, Glasow A, Zelent A, Enver T
Crosstalk between retinoic acid signaling and transcription factor GATA-2
Mol Cell Biol, 24: 6824-6836, 2004
107. Okada Y, Matsuura E, Tozuka Z, Nagai R, Watanabe A, Matsumoto K, Yasui K, Jackman RW, Nakano T, Doi T
Upstream stimulatory factor stimulates transcription through the E-box motif in the PF4 gene in megakaryocytes
Blood, 104:2027-2034, 2004
108. Tanaka T, Zheng J, Kitajima K, Kita K, Yoshikawa H, Nakano T
Differentiation Status Dependent Function of FOG-1
Genes to Cells, 9:1213-26, 2004
109. Maekawa M, Ito C, Toyama Y, Suzuki-Toyota F, Kimura T, Nakano T, Toshimori K.
Stage-specific expression of mouse germ cell-less-1 (mGCL-1), and multiple deformations during mgcl-1 deficient spermatogenesis leading to reduced fertility.
Arch Histol Cytol, 67:335-47, 2004.
110. Hatano SY, Tada M, Kimura H, Yamaguchi S, Kono T, Nakano T, Suemori H, Nakatsuji N, Tada T.
Pluripotential competence of cells associated with Nanog activity
Mech Dev, 122:67-79, 2005.
111. Kataoka TR, Komazawa N, Morii E, Ohboki K, Nakano T
Reduced expression of IL-12 receptor {lower case beta}2 and IL-18 receptor α genes in natural killer cells and macrophages derived from B6^{-mi/mi} mice
Lab Invest, 85:146-53, 2005

112. Kataoka TR, Komazawa N, Morii E, Ohboki K, Nakano T
Involvement of connective tissue type mast cells in Th1 immune responses via Stat4 expression
Blood, 105:1016-20, 2005
113. Kimura T, Murayama K, Nakamura T, Watanabe S, Umehara H, Tomooka M, Nakano T
Testicular Teratomas: Back to Pluripotent Stem Cells
in Developmental Biology of Neoplastic Growth, Macieira-Coelho A. Eds, Springer, Berlin, pp133-150, 2005.
114. Hamada K, Sasaki T, Koni PA, Natsui M, Kishimoto H, Sasaki J, Yajima K, Hasegawa G, Naito M, M JI, Koyasu S, Itoh H, Nakao K, Suda T, Mak TW, Nakano T, Suzuki A
The PTEN/PI3K pathway governs normal vascular development and tumor angiogenesis
Genes Dev, 19:2054-65, 2005
115. Zheng J, Kitajima K, Sakai E, Kimura T, Minegishi N, Yamamoto M, Nakano T
Differential Effects of GATA-1 on Proliferation and Differentiation of Erythroid Lineage Cells
Blood, 107:520-527, 2006
116. Watanabe S, Umehara H, Murayama K, Okabe M, Kimura T, Nakano T
Activation of Akt Signaling is Sufficient to Maintain Pluripotency in Mouse and Primate Embryonic Stem Cells
Oncogene, 25:2697-707, 2006
117. Kitajima K, Tanaka M, Yen H, Sato A, Sugiyama D, Umehara H, Sakai E, Nakano T
Redirecting Differentiation of Hematopoietic Progenitors by a Transcription Factor GATA-2
Blood, 2006, 107:1857-63, 2006
118. Kitajima K, Zheng J, Yen H, Sugiyama D, Nakano T
Multipotential differentiation ability of GATA-1 null erythroid committed cells
Genes & Development, 20:654-9, 2006
119. Aravin A, Gaidatzis D, Pfeffer S, Lagos-Quintana M, Landgraf P, Iovino N, Morris P, Brownstein MJ, Kuramochi-Miyagawa S, Nakano T, Chien M, Russo JJ, Ju J, Sheridan R, Sander C, Zavolan M, Tuschl T
A novel class of small RNAs bind to MILI protein in mouse testes
Nature, 442:203-7, 2006
120. Lau NC, Seto AG, Kim J, Kuramochi-Miyagawa S, Nakano T, Bartel DP, Kingston RE
Characterization of the piRNA complex from rat testes s
Science, 313:363-7, 2006
121. Tsuruta H, Kishimoto H, Sasaki T, Natsui M, Shibata Y, Tsuchiya N, Horie Y, Hamada K, Yajima N, Enomoto K, Gordon JI, Mak TK, Nakano T, Habuchi T, Suzuki A
Hyperplasia and carcinomas in Pten-deficient mice and reduced PTEN protein in human bladder cancer patients
Cancer Res, 66: 8389-8396, 2006
122. Hamazaki T, Kehoe SM, Nakano T, Terada N

The Grb2/mek pathway represses Nanog in murine embryonic stem cells.
Mol Cell Biol, 26: 7539-7549, 2006

123. Kimura T, Nakamura T, Maruyama K, Umehara H, Taketo MM, Nakano T
Stabilization of β -catenin leads to impaired primordial germ cell development by aberrant cell cycle progression
Developmental Biology, 300: 545-553, 2006
124. Liebe B, Petukhova G, Barchi M, Bellani M, Braselmann H, Nakano T, Pandita TK, Jasin M, Fornace A, Meistrich ML, Baarens WM, Schimenti J, de Lange T, Keeney S, Camerini-Otero RD, Scherthan H. Mutations that affect meiosis in male mice influence the dynamics of the mid-preleptotene and bouquet stages.
Exp Cell Res, 312: 3768-3781, 2006
125. Nakamura T, Arai Y, Umehara H, Masuhara M, Kimura T, Taniguchi H, Sekimoto T, Ikawa M, Yoneda Y, Okabe M, Tanaka S, Shiota K, Nakano T
PGC7/Stella protects against DNA demethylation in early embryogenesis
Nature Cell Biol, 9: 64-71, 2007
126. Chen L, Shen R, Ye Y, Pu XA, Liu X, Duan W, Wen J, Zimmerer J, Wang Y, Liu Y, Lasky LC, Heerema NA, Perrotti D, Ozato K, Kuramochi-Miyagawa S, Nakano T, Yates AJ, Carson Iii WE, Lin H, Barsky SH, Gao JX
Precancerous stem cells have the potential for both benign and malignant differentiation
PLoS ONE. Mar 14;2:e293, 2007
127. Murayama K, Kimura T, Tarutani M, Tomooka M, Hayashi R, Okabe M, Nishida K, Itami S, Katayama I, Nakano T
Akt activation induces epidermal hyperplasia and proliferation of epidermal progenitors.
Oncogene, 26:4882-8, 2007
128. Lee J, Kanatsu-Shinohara M, Inoue E, Ogonuki N, Miki H, Toyokuni S, Kimura T, Nakano T, Ogura A, Shinohara T
Akt mediates self-renewal division of mouse spermatogonial stem cells.
Development, 134: 1853-1859, 2007
129. Kishimoto H, Ohteki T, Yajima N, Kawahara K, Natsui M, Kawarasaki S, Hamada K, Horie Y, Kubo Y, Arase S, Taniguchi M, Vanhaesebroeck B, Mak TW, Nakano T, Koyasu S, Sasaki T, Suzuki
Pten/PI3K pathway governs the homeostasis of Valpha14iNKT cells.
Blood, 109: 3316-24, 2007
130. Umehara H, Kimura T, Ohtsuka S, Nakamura T, Kitajima K, Ikawa M, Okabe M, Niwa H, Nakano T
Efficient derivation of embryonic stem cells by inhibition of glycogen synthase kinase-3.
Stem Cells, 25:2705-11, 2007
131. Kimura T, Tomooka M, Yamano N, Murayama K, Matoba S, Umehara H, Kanai Y, Nakano T
Akt signaling promotes derivation of embryonic germ cells from primordial germ cells
Development, 135:869-79, 2008

132. Sugiyama D, Tanaka M, Kitajima K, Zheng J, Yen H, Murotani T, Yamatodani A, Nakano T. Differential context-dependent effects of FOG-1 on mast cell development and differentiation.
Blood, 111:1924-32, 2008
133. Tamaru S, Kitajima K, Nakano T, Eto K, Yazaki A, Kobayashi T, Matsumoto T, Wada H, Katayama N, Nishikawa M.
Calyculin A retraction of mature megakaryocytes proplatelets from embryonic stem cells.
Biochem Biophys Res Commun, 366:763-8, 2008
134. Kuramochi-Miyagawa S, Watanabe T, Gotoh K, Totoki Y, Toyoda A, Ikawa M, Asada N, Kojima K, Yamaguchi Y, Ijiri T, Hata K, Li E, Matsuda Y, Kimura T, Okabe M, Sakaki Y, Sasaki H, Nakano T
DNA methylation of retrotransposon genes is regulated by Piwi family members MILI and MIWI2 in murine fetal testes.
Genes Dev, 22:918-30, 2008
135. Watanabe T, Totoki Y, Toyoda A, Kaneda M, Kuramochi-Miyagawa S, Obata Y, Chiba H, Kohara Y, Kono T, Nakano T, Surani MA, Sakaki Y, Sasaki H.
Endogenous siRNAs from naturally formed dsRNAs regulate transcripts in mouse oocytes.
Nature, 453:539-43, 2008
136. Kita K, Kimura T, Nakamura N, Yoshikawa H, Nakano T.
PI3K/Akt signaling as a key regulatory pathway for chondrocyte terminal differentiation.
Genes Cells, 13:839-850, 2008
137. Nakamura T, Inoue K, Ogawa S, Umehara H, Ogonuki N, Miki H, Kimura T, Ogura A, Nakano T.
Effects of Akt signaling on nuclear reprogramming.
Genes Cells, 13:1269-1277, 2008
138. Sakai E, Kitajima K, Sato A, Nakano T.
Increase of hematopoietic progenitor and suppression of endothelial gene expression by Runx1 expression during in vitro ES differentiation.
Exp Hematol. 37:334-345, 2009.
139. Unhavaithaya Y, Hao Y, Beyret E, Yin H, Kuramochi-Miyagawa S, Nakano T, Lin H.
MILI, a piRNA binding protein, is required for germline stem cell self-renewal and appears to positively regulate translation.
J Biol Chem, 284:6507-6519, 2009
140. Kojima K, Kuramochi-Miyagawa S, Chuma S, Tanaka T, Nakatsuji N, Kimura T, Nakano T.
Associations between PIWI proteins and TDRD1/MTR-1 are critical for integrated subcellular localization in murine male germ cells.
Genes Cells, 14:1155-1165, 2009
141. Yoshimura T, Toyoda S, Kuramochi-Miyagawa S, Miyazaki T, Miyazaki S, Tashiro F, Yamato E, Nakano T, Miyazaki J.
Gtsf1/Cue110, a gene encoding a protein with two copies of a CHHC Zn-finger motif, is involved in spermatogenesis and retrotransposon suppression in murine testes.
Dev Biol, 335:216-217, 2009

142. Shoji M, Tanaka T, Hosokawa M, Reuter M, Stark A, Kato Y, Kondoh G, Okawa K, Chujo, Suzuki T, Hata K, Martin S, Noce T, Kuramochi-Miyagawa S, Nakano T, Sasaki H, Pillai RS, Nakatsuji N, Chuma S.
The TDRD9-MIWI2 complex is essential for piRNA-mediated retrotransposon silencing in the mouse male germline
Dev Cell, 17:775-787, 2009
143. Yamano N, Kimura T, Watanabe-Kushima S, Shinohara T, Nakano T.
Metastable primordial germ cell-like state induced from mouse embryonic stem cells by Akt activation
Biochem Biophys Res Commun, 392:311-316, 2010
144. Kuramochi-Miyagawa S, Watanabe T, Gotoh K, Takamatasu K, Chuma S, Kojima-Kita K, Shiromoto Y, Asada N, Toyoda A, Fujiyama A, Totoki Y, Shibata T, Kimura T, Nakatsuji N, Noce T, Sasaki H, Nakano T.
MVH in piRNA processing and gene silencing of retrotransposons
Genes Dev, 24:887-892, 2010
145. Huang CL, Cheng JC, Kitajima K, Nakano T, Yeh CF, Chong KY, Tseng CP
Disabled-2 is required for mesoderm differentiation of murine embryonic stem cells
J Cell Physiol, 225:92-105, 2010
146. Tanaka SS, Yamaguchi YL, Steiner KA, Nakano T, Nishinakamura R, Kwan KM, Behringer RR, Tam PP
Loss of Lhx1 activity impacts on the localization of primordial germ cells in the mouse
Dev Dyn, 239:2851-9, 2011
147. Wossidlo M, Nakamura T, Lepikhov K, Marques J, Zakhartchenko V, Boiani M, Arand J, Nakano T, Reik W, Walter J
5-hydroxymethylcytosine in the mammalian zygote is linked with epigenetic reprogramming
Nature Commun, in press, 2011
148. Watanabe T, Chuma S, Yamamoto Y, Kuramochi-Miyagawa S, Totoki Y, Toyoda A, Hoki Y, Fujiyama A, Shibata T, Sado T, Noce T, Nakano T, Nakatsuji N, Lin H, Sasaki H
MitoPLD Is a Mitochondrial Protein Essential for Nuage Formation and piRNA Biogenesis in the Mouse Germline
Develop Cell, in press, 2011
149. Ikegami D, Akiyama H, Suzuki A, Nakamura T, Nakano T, Yoshikawa H, Tsumaki N
Sox9 sustains chondrocyte survival and hypertrophy in part through PI3Kca-Akt pathways
Development, in press, 2011
150. Kimura T, Nakano T
Induction of pluripotency in primordial germ cells
Histol Histopathol, 26:643-650, 2011