

ANNUAL PUBLICATIONS

2nd Department of Dental Technology

1993.1.-2000.3.

I. Staffs and Students (April, 1999)

Professor	Ichijo, H.
Associate Professor	Hongo, T.
Lecturer	Kumei, Y.
Research Associate	Takeda, K.
	Hamazaki, T.(working abroad)
Technologist	Ando, H.
Secretary	Tatsumi, K.
Postdoctoral Fellow	Sawada, Y.
	Saitoh, M.
	Nishitoh, H.
	Tobiune, K.
Postgraduate Student	Inoshita, S.
	Mochida, Y.
	Morita, K.
	Hatai, T.
	Matsuura, H.
	Takahashi, T.
	Maruoka, S.
Special Student	Matsuzawa, A.

II. Educational Outline of Graduate Course

The Department basically aims at providing graduate students with profound knowledge and broad experience in molecular biology.

III. Research Subjects

- 1) Signal transduction through MAP kinase superfamily.
- 2) Mechanisms of signal transduction of cellular stress and cell death.

IV. Publications (January, 1993-March, 2000)

A. Original Articles

- 1) Ohmura, T.: The expression of osteoblastic features in a SV40 large T antigen immortalized mouse calvaria cell line, *J. Stomatol. Soc., Jpn.*, 60(3), 359-371, 1993 (in Japanese).
- 2) Fujita, M.: In vitro study on biocompatibility of zirconium and titanium, *J. Stomatol. Soc., Jpn.*, 60(1), 54-65, 1993 (in Japanese).
- 3) ○ Fukuchi, N., Akao, M. and Sato, A.: Effect of hydroxyapatite microcrystals on macrophage activity, *BioMedical Materials and Engineering*, 5(4), 219-231, 1995 .
- 4) ○ Yoshida, A.: Basic studies on aging mandible - Age-related changes of osteoblastic cells from mouse mandible - , *J. Stomatol. Soc., Jpn.*, 62(1), 127-148, 1995 (in Japanese).
- 5) Sato, K., Takakuwa, K., Ohmura, T., Sato, A.: Cytotoxic effects of dental resin monomers on cultured human pulp cells, *J. J. Dent. Mater.*, 14(3), 341-347, 1995 (in Japanese) .
- 6) Duke, J., Sato, A., Hamazaki, T. and Montufar-Solis, D.: Clinorotation inhibits chondrogenesis in micromass cultures of embryonic mouse limb cells , *Environmental Medicine*, 39(1), 1-12, 1995 .
- 7) Ohmura, T., Sato, K., Sato, A.: Characterization of a mouse osteoblastic cell line immortalized with SV40 large T antigen, *Jpn. J. Tissue Cult. Dent. Res.*, 4(1), 67-74, 1995 (in Japanese).
- 8) ○ Masuda, I.: An in vitro oral mucosal model reconstructed from human normal gingival cells, *J. Stomatol. Soc., Jpn.*, 63(2), 54-73, 1996 (in Japanese) .
- 9) Masuda, I., Sato, A., Sakakibara, T., Enomoto, S.: The characterization of in vitro human oral mucosal models reconstructed

- from gingival cells, *Jpn. J. Tissue Cult. Dent. Res.*, 5(1), 9-21, 1996 (in Japanese).
- 10) Arai, I., Masuda, I., Hamazaki, T., Sato, K., Sato, A.: The dynamic analysis of cell cycles with the system dynamics model, *J. J. Dent. Mater.*, 15(5), 459-466, 1996 (in Japanese) .
 - 12) Akiyama, H., Kanai, S., Hirano, M., Kumei, Y., Shimokawa, H., Katano, H., Hara, E., Song, S., Mukai, C., Nagaoka, S.: An improved quantitative RT-PCR fluorescent method for analysis of gene transcripts in the STS-65 space shuttle experiment, *J. Biotechnol.*, 47, 325-333, 1996.
 - 13) Kumei, Y., Shimokawa, H., Katano, H., Akiyama, H., Hirano, M., Mukai, C., Nagaoka, S., Whitson, P.A. and Sams, C.F.: Microgravity induces prostaglandin E2 and interleukin-6 production in normal rat osteoblasts: Role in bone demineralization, *J. Biotechnol.*, 47, 313-324, 1996.
 - 14) Kumei, Y.: Space biomedical sciences and cell culture in space flight, *Modern Media*, 42, 349-356, 1996.
 - 15) Yoshii, E.: Cytotoxic effects of acrylates and methacrylates: Relationships of monomer structures and cytotoxicity, *J. Biomed. Mater. Res.*, 36(3), 514-527, 1997.
 - 16) Sato, K., Yoshii, E., Hongo, T., Hikage, S., Sato, A.: Dissolution of metals from titanium alloys in amino acid solutions and toxicity of dissolved metals, *J. J. Dent. Mater.*, 16(2), 122-127, 1997 (in Japanese) .
 - 17) Hamazaki, T., Sato, A.: Effects of hypergravity on cultivated mouse osteoblastic cells, *Jpn. J. Tissue Cult. Dent. Res.*, 6(1), 9-16, 1997 (in Japanese).
 - 18) Wang, T.-H., Wang, H.-S., Ichijo, H., Giannakakou, P., Foster, J.S., Fojo, T. and Wimalasena, J.: Microtubule-interfering agents activate c-Jun N-terminal kinase/stress-activated protein kinase (JNK/SAPK) through both ras and apoptosis signal-regulating kinase (ASK1) pathways. *J. Biol. Chem.*, 273, 4928-4936, 1998.
 - 19) Funato, N., Moriyama, K., Saitoh, M., Baba, Y., Ichijo, H. and Kuroda, T.: Evidence for apoptosis signal-regulating kinase (ASK)1 in the regenerating palatal epithelium upon acute injury. *Lab. Invest.*, 78, 477-483, 1998.
 - 20) Takase, M., Imamura, T., Sampath, T.K., Takeda, K., Ichijo, H., Miyazono, K. and Kawabata, M.: Induction of Smad6 mRNA by Bone Morphogenetic Proteins. *Biochem. Biophys. Res. Commun.*, 244, 26-29, 1998.
 - 21) Saitoh, M., Nishitoh, H., Fujii, M., Takeda, K., Tobiume, K., Sawada, Y., Kawabata, M., Miyazono, K. and Ichijo, H.: Mammalian thioredoxin is a direct inhibitor of apoptosis signal-regulating kinase (ASK) 1. *EMBO J.*, 17, 2596-2606, 1998.
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 - 23) Nishitoh, H., Saitoh, M., Mochida, Y., Takeda, K., Nakano, H., Rothe, M., Miyazono, K. and Ichijo, H.: ASK1 is essential for JNK/SAPK activation by TRAF2. *Mol. Cell*, 2, 389-395, 1998.
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 - 26) Saitoh, M., ten Dijke, P., Miyazono, K. and Ichijo, H.: Cloning and characterization of p70S6Kb defines a novel family of p70 S6 kinases. *Biochem. Biophys. Res. Commun.*, 253, 470-476, 1998.
 - 27) Sato, A., Hamazaki, T., Hongo, T., Masuda, I., Ando, J., Noda, M., Oomura, T., Osada, H., Takeya, H., Watabe, M., Tanaka, H., Takaoki, M., Kohno, Y., Nakamura, T., Nakamura, Y., Yoshizaki, I., Koshikawa, N., Aizawa, S., Ogiso, A. and Yoda, S.: Effect of microgravity on the expression of growth-related genes in osteoblasts, *JASMA*, 15, 233-237, 1998 (in Japanese).
 - 28) Kumei, Y., Shimokawa, H., Katano, H., Akiyama, H., Hirano, M., Mukai, C., Nagaoka, S., Whitson, P.A. and Sams, C.F.: Spaceflight modulates insulin-like growth factor binding proteins and glucocorticoid receptor in osteoblasts. *J. Appl. Physiol.* 85: 139-147, 1998
 - 29) Chen, Z., Seimiya, H., Naito, M., Mashima, T., Kizaki, A., Dan, S., Imaizumi, M., Ichijo, H., Miyazono, K. and Tsuruo, T.: ASK1 mediates apoptotic cell death induced by genotoxic stress. *Oncogene*, 18, 173-180, 1999.
 - 30) Wang, T.H., Popp, D.M., Wang, H.S., Saitoh, M., Mural, J.G., Henley, D.C., Ichijo, H. and Wimalasena, J.: Microtubule dysfunction induced by paclitaxel initiates apoptosis through both c-jun N-terminal kinase (JNK)-dependent and -independent pathways in ovarian cancer cells. *J. Biol. Chem.*, 274, 8208-8216, 1999.
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- 33) Fujii, M., Takeda, K., Imamura, T., Aoki, H., Sampath, T.K., Enomoto, S., Kawabata M., Kato, M., Ichijo, H. and Miyazono, K.: Roles of bone morphogenetic protein type I receptors and smad proteins in osteoblast and chondroblast differentiation. *Mol. Biol. Cell*, 10, 3801-3813, 1999.
- 34) Yamamoto, K., Ichijo, H. and Korsmeyer, S.J.: BCL-2 is phosphorylated and inactivated by an ASK1/JNK pathway normally activated at G2/M. *Mol. Cell Biol.*, 19, 8469-8478, 1999.
- 35) Yasuda, S., Inoue, K., Hirabayashi, M., Higashiyama, H., Yamamoto, Y., Fuyuhiko, H., Komure, O., Tanaka, F., Sobue, G., Tsuchiya, K., Hamada, K., Sasaki, H., Takeda, K., Ichijo, H. and Kakizuka, A.: Triggering of neuronal cell death by accumulation of activated SEK1 on nuclear polyglutamine aggregations in PML bodies. *Genes Cells*, 4, 743-756, 1999.
- 36) Kumei, Y., Shimokawa, H., Akiyama, H., Hirano, M., Mukai, C., and Nagaoka, S.: Growth factor receptor signal transduction is modulated by microgravity in rat osteoblasts. *Gravit Space Biol Bull.*13: 61, 1999.
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- 38) Kanamoto, T., Mota, M., Takeda, K., Rubin, L.L., Miyazono, K., Ichijo, H. and Bazenet, C.E.: Role of apoptosis signal-regulating kinase in regulation of the c-Jun N-terminal Kinase pathway and apoptosis in sympathetic neurons. *Mol. Cell. Biol.*, 20, 196-204, 2000.
- 39) Liu, H., Nishitoh, H., Ichijo, H. and Kyriakis, J.M.: Activation of apoptosis signal-regulating kinase 1 (ASK1) by tumor necrosis factor receptor-associated factor 2 (TRAF2) requires prior dissociation of the ASK1 inhibitor Thioredoxin. *Mol. Cell. Biol.*, 20, 2198-2208, 2000.

B. Books

- 1) Sato, A.: Dental materials. In: Alternatives to laboratory animals in toxicity testing, Sato, A. et al. eds., Eikodo, Tokyo, p.41-50, 1993 (in Japanese).
- 2) Sato, A.: Tissue culture. In: Alternatives to laboratory animals in toxicity testing, Sato, A. et al. eds., Eikodo, Tokyo, p.159-170, 1993 (in Japanese).
- 3) Sato, A.: How to handle hazardous waste, In: Hazardous waste(Ernst-August Behne ed.),FDI-World Dental Federation, p.8-14, 1993 (in Japanese).
- 4) Hongo, T.: Terminology in toxicological sciences, ed by the Japanese society of toxicological sciences, Yakugyonittupou-sha, Tokyo, 1993 (in Japanese).
- 5) Sato, A.: Dictionary of cell culture, eds by the Japanese tissue culture association et al., Japan scientific societies press, Tokyo, 1993 (in Japanese).
- 6) Sato, A.: Roles of cell culture in biomaterials.: In Artificial organs 1994-95, Agishi, T. ed., Nakayamashoten, Tokyo, p.288-291, 1994 (in Japanese).
- 7) Sato, A., Kimura, H., Sato, K.: Renal cell toxicity testing - transepithelial resistance testing and transepithelial dye permeability testing.: In Manuals of alternatives testing to laboratory animal, Ohno, T. ed., Kyoritsu-Syuppan, Tokyo, p.73-79, 1994 (in Japanese).
- 8) Sato, A., Sato, K., Ohmura, T. and Masuda, I.: The newly established osteoblastic cell line for target organ toxicity testing, In: *Alternative methods in toxicology and the life sciences*, 11 (Goldberg, A.M. et al. eds.), Mary Ann Liebert, Inc., NY, 87-92, 1995.
- 9) Sato, A.: Regulation of renal function.: In New medical Sciences, vol.9., Wada, H. ed., Nakayamashoten, Tokyo, p.83-106, 1996 (in Japanese).
- 10) Sato, A.: How cells recognize gravity.: In Exciting zoology - space and life on earth - , ed by Office of Science Council of Japan, 67-75, Japan Science Support Foundation, 1996 (in Japanese).
- 11) Sato, K.: Biocompatibility testing of dental materials.: In Side-effects and safety of dental devices, Sato, A. ed., Gakkenshoin, Tokyo, p.45-50, 1997 (in Japanese) .
- 12) Kumei, Y.: long-term culture of human bone marrow cells: Microgravity effects on the growth and differentiation of immune and bone cells, In: *ISAS Reports of Basic Experiments oriented to Space Station Utilization*, 320-326, 1997.
- 13) Kumei, Y.: Microgravity effects on the growth and function of rat normal osteoblasts, In: *Second International Microgravity Laboratory Final Report* (NASA Reference Publication 1405), 170-171, 1997.
- 14) Hongo, T.: Factors affecting side-effects of dental materials.: In Side-effects and safety of dental devices, Sato, A. ed., Gakkenshoin, Tokyo, 37-42, 1997 (in Japanese).
- 15) Ichijo, H., Miyazono, K.: Roles of ASK1 in Apoptosis Signaling , In: Annual Review MEN-EKI, Kikuchi, K. et al. eds., Tyugaiigakusha, Tokyo, p.155-162, 1998 (in Japanese) .
- 16) Saitoh, M., Miyazono, K., Ichijo, H.: Thioredoxin as an inhibitory molecule of ASK (apoptosis signal-regulating kinase) 1, In:

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- 17) Hongo, T. and Sato, A.: Toxicity of polymer components: In Biocompatibility of Biomaterials, eds by Sato, A., Ishikawa, T., Sakurai, H. and Nakamura, A., Nakayama-Shoten, p510-514, 1998 (in Japanese).
 - 18) Sawada, Y., Ichijo, H.: TGF- β , Activin, In: Osteoporosis, Orimo, H. et al. eds., Life Science Publishing, Tokyo, p.209-212, 1999 (in Japanese).
 - 19) Nishitoh, H., Ichijo, H.: In vitro kinase assay for MAPK, JNK, p38 and PKC, In: Experimental Methods in Apoptosis (Experimental Medicine extra issue), Tsujimoto, Y. et al. eds., Yodosha, Tokyo, p.180-184, 1999 (in Japanese).
 - 20) Yamamoto, K., Ichijo, H.: Signal transduction of Apoptosis, In: Understanding Cell signaling, Yamamoto, 山本雅, et al. eds., Yodosha, Tokyo, p.97-103, 1999 (in Japanese).
 - 21) Inoshita, S., Ichijo, H.: Roles of ASK1 kinase in Apoptosis, In: Clinical Genetics '99 - Leading edge of Immunology - , (Saishin-Igaku 54 Sep. 1999 extra issue), 2321-2329, 1999 (in Japanese).
 - 22) Hongo, T. and Sato, K. and Sato, A.: Culture of renal cells: In Methods in cell biology I-Cell culture-, ed by Ookuma, K., Hirokawa publishing, p83-95, 1999 (in Japanese).

C. Review Articles

- 1) Sato, A.: Cell culture, advantage and disadvantage, *Kidney and Dialysis*, 35(4), 477-481, 1993 (in Japanese).
- 2) Sato, A.: Cell culture of renal cells and its advantage, *Japanese society of nephrology*, 35(12), 1287, 1993 (in Japanese).
- 3) Sato, A.: This and that on PI employment in POCC, *JASMA*, 10(1), 71-72, 1993 (in Japanese).
- 4) Sato, A.: Subdivision and intergration, *JASMA*, 10(3), 157, 1993 (in Japanese).
- 5) Sato, A.: A report of reviewing of the past activities of L-6A experiment on FMPT, *Biological Sciences in Space*, 7(4), 353-355, 1993 (in Japanese).
- 6) Sato, A.: A report of the 6th annual meeting of the Japanese society of alternative to animal experiments, *The tissue culture*, 19(11), 421-423, 1993 (in Japanese).
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- 8) Sato, A.: Cell culture in space life science, *The Tissue Culture*, 20(3), 115-120, 1994 (in Japanese).
- 9) Sato, A.: Responses to cultured cell under microgravity, 48(10), 18-22, 1994 (in Japanese).
- 10) Sato, A.: Review of tissue reaction to implants - especially titanium and calcium phosphate ceramics - , *The Journal of the Tokyo Dental Association*, 42(9), 556-562, 1994 (in Japanese).
- 11) Sato, A., Hamazaki, T., Masuda, I., Hongo, T., Sato, K.: New approaches to cell culture methodology in microgravity, *The Tissue Culture*, 22(9), 381-384, 1996 (in Japanese).
- 12) Sato, A.: The validation of alternative methods, *The Journal of Toxicological Sciences*, 21(4), 189-196, 1996 (in Japanese).
- 13) Kodama, T., Sato, A.: Prosthodontic materials and toxic responses to perigingiva, *The Quintessence*, 21(8), 1141-1149, 1996 (in Japanese) .
- 14) Sato, A.: Safety evaluation of dental materials - on guideline of testing method - , *DE*, 120, 13-16, 1997 (in Japanese).
- 15) Hamazaki, T.: Inhibition of proliferation in cultured osteoblast cells under load-dispersed culture, *The bulletin of Sophia university, life science*, 16, 39-47, 1997 (in Japanese). 1) Ichijo, H.: Molecular mechanisms for cell life and cell death, *J. Stomatol. Soc., Jpn.*, 65(2), 155-163, 1998 (in Japanese) .
- 16) Takeda, K., Ichijo, H.: Analysis of BMP-inducible gene, BORG, *J. Stomatol. Soc., Jpn.*, 65(3), 353, 1998 (in Japanese) .
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- 19) Takeda, K., Ichijo, H.: Regulation of cdk inhibitors by TGF- β , *Clin. Immunol.*, 30(5), p697-700, 1998 (in Japanese).
- 20) Sawada, Y., Ichijo, H.: Coupling of bone formation and absorption, *Gendai-Iryo*, 30(12), 2952-2959, 1998 (in Japanese).
- 21) Hongo, T.: Components of dental resins and chemical substances leached from these resins, *The Journal of the Tokyo Dental Association*, 46(9), 506-513, 1998 (in Japanese).
- 22) Ichijo, H.: From receptors to stress-activated MAP kinases. *Oncogene* (review article), 18, 6087-6093, 1999.
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- 28) Sawada, Y., Ichijo, H.: TGF- β and Bone Metabolism, *Osteoporosis Japan*, 7(3), 378-379, 1999 (in Japanese).
- 29) Ichijo, H.: Regulatory mechanisms of Apoptosis, *JUNKAN*, 20(3), 14-20, 1999 (in Japanese).
- 30) Hongo, T.: Analysis of dental resins and bisphenol A, *Dental Outlook*, 93, 766-769, 1999 (in Japanese).