美原賞受賞者ＣＶと業績抜粋

平成１３年度受賞

慶應義塾大学医学部客員教授

冨田稔

履歴書

昭和 34年 3月	慶應義塾大学医学部卒
38年 4月	米国 Detroit, Wane State University Cerebrovascular Units (JS Meyer)二年半留学
41年 6月	慶應義塾大学医学部大学院卒
43年 1月	冨田病院勤務
45年 4月	慶應義塾大学医学部兼任講師(約20年間)
46年 4月	宮崎医大非常勤講師(約20年間)
47年 8月	冨田病院院長 現在に至る
平成 元年 4月	岡崎国立生理学研究所共同研究員(3年間)
平成 2年 4月	慶應義塾大学医学部客員助教授(5年間)
7年11月	慶應義塾大学医学部客員教授 現在に至る

賞罰、資格

昭和 35 年 3月	ECFMG
平成 6年 6月	日本医師会学術最高優功賞
平成 13 年 2 月	美原賞受賞

会員

American Heart Association
(Council)
World Federation of Neurology
New York Academy of Sciences
International Society of Cerebral Blood Flow and Metabolism
（Chairman of Membership Committee, 1995-1999
Program Committee for 20th International Symposium on Cerebral Blood Flow and Metabolism (Brain 01, Taipei, June 10-13, 2001)

美原賞受賞後における業績（平成１９年２月現在）

（**Medline** 主要論文のみ）

Tomita M, Ohtomo M, Suzuki N: Contribution of the flow effect caused by shear-dependent RBC aggregation to NIRS spectroscopic signals. NeuroImage 33:1-10, 2006.

Tomita M. Flow effect impacts NIRS, jeopardizing quantification of tissue hemoglobin. Neuroimage 33: 13-6, 2006.

Tomita M, Tanahashi N, Takeda H, Schiszler I, Osada T, Unekawa M, Suzuki N. Capillo-venous flow in the brain: significance of intravascular RBC aggregation for venous flow regulation. Clinical Hemorheology and Microcirculation. 34: 51-57, 2006.

Osada T, Tomita M, Suzuki N. Spindle-shaped constriction and propagated dilation of arterioles during cortical spreading depression. Neuroreport.17:1365-8, 2006.

Tomita M, Schiszler I, Tomita Y, Tanahashi N, Takeda H, Osada T, Suzuki N: Initial oligemia with capillary flow stop followed by hyperemia during K+-induced cortical spreading depression in rats. J Cereb Blood Flow Metab. 25(6):742-7. 2005.

Tomita M: Increased intracranial pressure and brain edema. In ISN Book Series, Pathology & Genetics, Structure and functions of CNS blood vessels, Cerebrovascular Diseases, Chapter 5, edited by Hannu Kalimo, (2005) pp39-49.

Tomita M, Tanahashi N, Takeda H, Takao M, Tomita Y, Amano T, Fukuuchi Y. Astroglial sewlling in the neuronal depolarization ensemble. Acta Neurochir 86: 219-222, 2003.

Inoue K, Tomita M, Fukuuchi Y, Tanahashi N, Kobari M, Takao M, Takeda H, Yokoyama M. Dynamic observation of oxygenation-induced contraction of and transient fiber-network formation/disassembly in cultured human brain microvascular endothelial cells. J Cereb Blood Flow Metab. 23 (7), 821-828, 2003.

Tomita Y, Tomita M, Schiszler I, Amano T, Tanahashi N, Kobari M, Takeda H, Ohtomo M, Repetitive concentric wave-ring spread of oligemia/hyperemia in the sensorimotor cortex accompanying K(+)-induced spreading depression in rats and cats.

Neurosci Lett. 322(3):157-60, 2002.

Tomita Y; Tomita M; Schiszler I; Amano T; Tanahashi N; Kobari M; Takeda H; Ohtomo M; Fukuuchi Y: Moment analysis of microflow histogram in focal ischemic lesion to evaluate microvascular derangement following small pial arterial occlusion in rats. J Cereb Blood Flow Metab 22(6): 663-669, 2002.

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Takao M, Kobari M, Tanahashi N, Tomita M, Yokoyama M, Tomita Y, Otomo M, Inoue K, Fukuuchi Y. Dilatation of cerebral parenchymal vessels mediated by angiotensin type 1 receptor in cats. Neurosci Lett. 318(2):108-12, 2002.

Tomita Y, Tanahashi N, Tomita M, Itoh Y, Yokoyama M, Takeda H, Schiszler I, Fukuuchi Y. Role of platelet glycoprotein IIb/IIIa in ADP-activated platelet adhesion to aortic endothelial cells in vitro: observation with video-enhanced contrast microscopy. Clin Hemorheol Microcirc. 2001;24(1):1-9.

Tanahashi N, Fukuuchi Y, Tomita M, Tomita Y, Inoue K, Satoh H, Abe T. Adhesion of adenosine diphosphate-activated platelets to human brain microvascular endothelial cells under flow in vitro is mediated via GPIIb/IIIa. Neurosci Lett. 2001;301(1):33-6.

Tomita M, Schiszler I, Fukuuchi Y, Amano T, Tanahashi T, Kobari M, Takeda H, Tomita Y, Ohtomo M, Inoue K. A time-variable concentric wave-ring increase in light transparency and associated microflow changes during a potassium-induced spreading depression in the rat cerebral cortex. In Neuronal Activation and Microcirculation. M. Tomita, K. Kanno, E. Hamel, Eds., Elsevier Science, B.V., INS 1235, Amsterdam, 2002, pp 439-447

Schiszler I, Tomita M, Inoue K, Tanahashi N, Fukuuchi Y. Sustained microvascular flow response to functional activation in rat cerebral cortex. In Neuronal Activation and Microcirculation. M. Tomita, K. Kanno, E. Hamel, Eds., Elsevier Science, B.V., International Congress Series 1235, Amsterdam, 2002, pp 173-179

Tomita M, Fukuuchi Y, Tanahashi N, Tanaka K, Kobari M, Takao M, Tomita Y, Ohtomo M, Inoue M, Schiszler I Evolution of microvascular derangement in a small area of the rat cerebral cortex following occlusion of a pial arterial branch as observed by the novel photoelectric method. In: Maturation Phenomenon in Cerebral Ischemia IV, Edited by N.G.Bazan, U. Ito, V.L. Marcheselli, T. Kuroiwa, I. Klatzo, Springer, Berlin-Heidelberg-Tokyo, 2001, pp 165-170.

美原賞受賞時までの業績（平成１３年２月現在）

国際学会、シンポジウム主宰、および著書

著書1

1．　昭和63年6月、サテライトシンポジウム
“**脳虚血と充血**”，会長
（第4回世界微小循環学会、土屋雅春会長），大阪。
Proceedings: Cerebral Hyperemia and ischemia - From the Standpoint of Cerebral Blood Volume, Tomita M, Sawada T, Naritomi H, Heiss WD, eds.: Int. Natl. Congr. Ser. 764, Excerpta Medica, Amsterdam, 1988

著書2

2．平成2年4月、第 VI 回トビリシ国際シンポジウム、
“**脳微小循環**”，オーガナイザーMchedlishvili G, Tomita M, and Tuma RF、トビリシ。
Proceedings: Microcirculation of the Brain, Mchedlishvili G, Tomita M, Tuma RF, eds., Nova Science Publ. Inc., New York, 1992

著書3

3．平成5年5月、国際学会、“**脳微小循環障害**”，会長、東京。
Proceedings：Microcirculatory Stasis in the Brain, Tomita M, Mchedlishvili G, Rosenblum WI, Heiss W-D, Fukuuchi Y, eds., Int. Natl. Congr. Ser. 764, Excerpta Medica, Amsterdam, 1993

4．平成8年5月、国際シンポジウム、“**脳虚血、サイトカイン、細胞動員**”，
会長福内靖男、オーガナイザー冨田稔、東京。
Proceedings: Ischemia, Cytokines and Cellular Mobilization in the Brain, Fukuuchi Y, Tomita M, eds., Keio J. Med. 45: 174-274, 1996

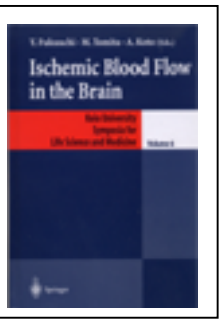

著書5

5．平成8年10月、第5回ヨーロッパ微小循環学会シンポジウム、組織委員長、“**赤血球凝集と脳卒中**”、ローマ。
Proceedings: RBC Aggregation and Stroke (Abstract 集)、Tomita M, Fukuuchi Y eds., at Joint 3rd World Congress and 5th European Microcirculation, Rome、1996

6．平成11 年6月、国際脳循環代謝学会のシンポジウム、組織委員長、(Brain 99)、
“脳循環調節：神経と化学性調節”、コペンハーゲン。
Proceedings: Chemical and neural control of the cerebral circulation, at Brain 99,

Copenhagen, June、2000, Regulation of cerebral microcirculation: update. Tomita, N. Suzuki, E. Hamel, D. Busija, M. Lauritzen: Keio J. Med.; 49(1):26-34, 2000

7. 平成11年10月、慶應国際シンポジウム(坂口記念)、
“虚血脳血流”, 会長福内靖男、
オーガナイザー冨田稔、厚東篤生、東京。
Proceedings: Ischemic Blood Flow in the Brain, Fukuuchi Y, Tomita M, Koto A, eds., Springer, Tokyo-Berlin-Heidelberg, 1999



著書7

8. 平成11年6月、第7回トビリシインターネットシンポジウム、
“虚微小循環とヘモレオロジー:病理的変化”、オーガナイザーMchedlishvili G, Tomita M, Schmid-Schönbein、トビリシ-東京-サンジェゴ。
Proceedings: Hemorheology in Microcirculation: Pathological Changes, Internet Virtual Symposium, The 7th Tbilisi Symposium, Mchedlishvili G, Tomita M, Schmid-Schönbein eds., Keio J Med 49 (Suppl 3), 2000

9. 平成13 年6月、国際脳循環代謝学会のサテライトシンポジウム (Brain 01)、
“脳活性化と微小循環調節”、会長、東京。
Proceedings: Brain Activation and CBF Control, Tomita M, Kanno I, Hamel Edith eds., Elsevier Science BV, ICS 1235, 2002

プログラム集
本は印刷中

10. 平成13 年6月、国際脳循環代謝学会シンポジウム (Brain 01)
“脳微小循環”, Organizer and Chairman, **台北**
Peter Gaehtgens: Glycocalyx, tissue hematocrit, and microcirculation
Martin Lauritzen: Spreading depression and mircrocirculation
Minoru Tomita: Local hierarchial vascular perturbation during spreading depression
Ute Lindauer: Nitric oxide and neurovascular coupling: trouble in paradise

美原賞受賞までの主要業績

1） Tomita M, Gotoh F, Sato T, Amano T, Tanahashi N, Tanaka K, Yamamoto M: Photoelectric method for estimating hemodynamic changes in regional cerebral tissue. Am J Physiol 235:H56-H63, 1978（組織の血液含量を光学的に測定する。これは Lambert-Beer の法則を応用したはじめての論文であったが、10年後に Briton Chance が同じことを報告、それの方が有名になった。現在の多くの内因的な光シグナル測定の基本となっているもの）。

2） Tomita M, Gotoh F, Amano T, Tanahashi N, Kobari M, Shinohara T, Mihara B: Transfer function through regional cerebral cortex evaluated by a photoelectric method. Am J Physiol 245:H385-H398, 1983（統計学のモーメント分析を組織血液通過時間の頻度関数にあてはめ、微小循環パラメーターの定量化をした）。

3） Tomita M, Gotoh F, Amano T, Tanahashi N, Tanaka K: "Low perfusion hyperemia" following middle cerebral arterial occlusion in cats of different age groups. Stroke 11:629-636, 1980（脳虚血病巣において血流が低いにもかかわらず血液が充満してくる現象の報告。その後多くの施設で PET, fMRI などで証明された）。

4） Gogolak I, Gotoh F, Tomita M, Tanahashi N, Kobari M, Shinohara T, Mihara B: No intracerebral steal phenomenon in the ischemic brain following papaverine administration. Stroke 16:114-117, 1985（血管拡張剤が脳卒中にスチール現象が起るため禁忌とされていたが、そんなものは起らないという論文。これ以後カルシュウム拮抗剤が使われるようになった）。

5） Tomita M, Gotoh F, Tanahashi N, Turcani P: Whole-blood red cell aggregometer for human and feline blood. Am J Physiol 251:H1205-H1210, 1986（同じ血液の透過光が血流依存性に大きく変化することを見出した）。

6） Tomita M, Gotoh F: Cascade of cell swelling (cytotoxic edema): Thermodynamic potential discharge of brain cells following membrane injury. Am J Physiol 262:H603-H610, 1992（細胞が機能するとき、あるいは細胞膜が傷害された時に自発的に膨化する事実の証明と非平衡熱力学に基づいた解釈）。

7） Istvan Schiszler, Minoru Tomita, Yasuo Fukuuchi, Norio Tanahashi, Koji Inoue: New optical method for analyzing cortical blood flow heterogeneity in small animals - validation of the method. Am J Physiol 279:H1291-1298, 2000（毛細血管レベルの血流変化の二次元的な表示方法）。

外国からの研究者との共同研究、指導

後藤文男主任教授

1）**Sandor, P.**：ハンガリーより

Sandor P, Gotoh F, Tomita M, Tanahashi N, Gogolak I: Effects of a stable enkephalin analogue, (D-Met2,Pro5)-enkephalinamide, and naloxone on cortical blood flow and cerebral blood volume in experimental brain ischemia in anesthetized cats. J Cereb Blood Flow Metab 6:553-558, 1986

2）**Gogolak, I**.: チェコより

Gogolak I, Gotoh F, Tomita M, Tanahashi N, Kobari M, Shinohara T, Mihara B: No intracerebral steal phenomenon in the ischemic brain following papaverine administration. Stroke 16:114-117, 1985

3）**Gerdsen, I.:** ドイツより

Tomita M, Gotoh F, Tanahashi N, Kobari M, Terayama Y, Mihara B, Ohta K, Gerdsen I: Comparison between the photoelectric method and H2 clearance method for measuring cerebrocortical blood flow in cats. J Cereb Blood Flow Metab 8:727-732, 1988

4）**Turcani, P.:** スロバックより

Turcani P, Gotoh F, Tomita M, Tanahashi N, Kobari M, Terayama Y, Mihara B, Ohta K: Role of platelets and leukocytes in the development of low perfusion hyperemia in the cerebral ischemic area of cats. In Cerebral vascular disease 6. Meyer JS, Lechner H, Reivich M, Ott EO(Eds.) Excerpta Medica, pp285-289, 1987

5）**Haapaniemi, H**.: フィンランドより

Haapaniemi H, Tomita M, Tanahashi N et al. Non-amoeboid locomotion of cultured microglia obtained from newborn rat brain. Neurosci Lett 193:121-124, 1995

福内靖男主任教授

6）**Schiszler, I.:** ハンガリーより

Schiszler I, Tomita M, Fukuuchi Y, Tanahashi N, Inoue K: New optical method for analyzing cortical blood flow heterogeneity in small animals - validation of the method. Am J Physiol 279:H1291-1298, 2000

業績一覧

原著（英文のみ）

目次

Ⅰ．脳循環生理関係（方法論を含む）

1. Tomita M, Gotoh F, Sato T, Amano T, Tanahashi N, Tanaka K, Yamamoto M: Photoelectric method for estimating hemodynamic changes in regional cerebral tissue. Am J Physiol 235:H56-H63, 1978
2. Tomita M, Gotoh F, Sato T, Amano T, Tanahashi N, Tanaka K, Yamamoto M: Comparative responses of the carotid and vertebral arterial systems of rhesus monkeys to betahistine. Stroke 9:382-387, 1978
3. Tomita M, Gotoh F, Sato T, Amano T, Tanahashi N, Tanaka K: Distensibility of cerebral vessels in response to acute hypertension in cats. Keio J Med 28:151-163, 1979
4. Tomita M, Gotoh F, Sato T, Tanahashi N, Tanaka K: 4-6 cycle per minute fluctuation in cerebral blood volume of feline cortical tissue in situ. J Cereb Blood Flow Metab 1 (Suppl 1), S443-S444, 1981
5. Tomita M, Gotoh F: Rearranged equation for determining local cerebral glucose utilization. Ann Neurol 10:65, 1981
6. Tomita M, Gotoh F: Local cerebral blood flow values as estimated with diffusible tracers: Validity of assumptions in normal and ischemic tissue. J Cereb Blood Flow Metab 1: 403-411, 1981
7. Tomita M, Gotoh F, Tanahashi N,Tanaka K, Kobari M: Ipsilateral increase in CBV by unilateral severing of the cervical synpathetic preganglionic fiber in cats. In Cerebral blood flow:Effects of nerves and neurotransmitters. Heistad DD, Marcus ML, Eds., Elsevier, North Holland, pp403-408, 1982
8. Tomita M, Gotoh F, Tanahashi N, Tanaka K, Kobari M: Photoelectric method for studying the intraparenchymal circulation. In Basic aspects of microcirculation. Tsuchiya M et al (Eds.) Elsevier, Excerpta Medica, Amsterdam, pp61-74,1982

9. Tomita M, Gotoh F, Sato T, Tanahashi N, Tanaka K, Kobari M: The vertebral arterial system in rhesus monkeys is less efficient in autoregulation of blood flow than the internal carotid arterial system. In Cerebral vascular disease 4. Meyer JS, Lechner H, Reivich M, Ott EO, Eds., Elsevier, North Holland, pp48-52, 1982
10. Tomita M, Gotoh F: Which circulates faster through the cerebral microcirculatory system, red cells or plasma? Stroke 13:722, 1982
11. Tomita M, Gotoh F, Amano T, Tanahashi N, Kobari M, Shinohara T, Mihara B: Transfer function through regional cerebral cortex evaluated by a photoelectric method. Am J Physiol 245:H385-H398, 1983
12. Amano T, Gotoh F, Tomita M, Tanahashi N, Kobari M, Shinohara T, Mihara B: Hemodynamic changes in feline sensorimotor cortices and autonomic nerve activity during penicillin-induced seizures. In Cerebral blood flow, metabolism and epilepsy. Baldy-Moulinier M et al., Eds., John Libbey & Company, pp135-141, 1983,
13. Tomita M, Gotoh F, Amano T, Tanahashi N, Kobari M, Shinohara T, Mihara B: Redistribution of blood flow between the intra and extracranial arterial systems on induced hypotension within the autoregulatory range in cats. J Cereb Blood Flow Metab 3 (Suppl.1):S644-S645, 1983
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15. Kobari M, Gotoh F, Tomita M, Tanahashi N, Shinohara T, Terayama Y, Mihara B, Turcani P: Dissociation between the changes in intracranial pressure and cerebral blood volume following administration of histamine. Acta Neurol Scand 72 (Suppl.):124, 1985)
16. Sandor P, Gotoh F, Tomita M, Tanahashi N, Gogolak I: Effects of a stable enkephalin analogue, (D-Met2, Pro5)-enkephalinamide, and naloxone on cortical blood flow and cerebral blood volume in experimental brain ischemia in anesthetized cats. J Cereb Blood Flow Metab 6:553-558, 1986
17. Tomita M, Gotoh F, Tanahashi N, Kobari M, Terayama Y, Mihara B, Ohta K, Gerdsen I: Comparison between the photoelectric method and H2 clearance method for measuring cerebrocortical blood flow in cats. J Cereb Blood Flow Metab 8:727-732, 1988
18. Tomita M: Merits and demerits of the photoelectric method for measuring cerebral blood volume. In Cerebral Hyperemia and ischemia - From the Standpoint of Cerebral Blood Volume, ICS 764, Tomita M, Sawada T, Naritomi H, Heiss WD, Eds., Elsevier, Amsterdam, pp237-245, 1988
19. Tomita M: Significance of Cerebral Blood Volume. In Cerebral Hyperemia and Ischemia - From the Standpoint of Cerebral Blood Volume, ICS 764, Tomita M, Sawada T, Naritomi H, Heiss WD, Eds., Elsevier, Amsterdam, pp3-31, 1988
20. Tomita M, Gotoh F, Tanahashi N, Shinohara T, Terayama T, Mihara B, Ohta K: Indicator dilution curves and heterogeneity in tissue perfusion -analysis of a microvascular model- In Microcirculation Annual 1989. Asano M et al., Eds., Nihon-Igakukan, Tokyo, pp7-8, 1989

21. Tomita M, Gotoh F: Functional interpretation of tissue indicator dilution curves and its verification. Int J Microcirc 8 (Suppl.1):S33, 1989.
22. Tomita M, Gotoh F, Tanahashi N, Kobari M, Shinohara T, Terayama Y, Yamawaki T, Mihara B, Ohta K, Kaneko A: Mechanical filtration rate (Lp) of the membrane of cultured glioma cells (C6). In Brain Edema 1990. Reulen HJ, Baethman A, Fenstermacher J, Marmarou A, Spatz M, Eds., Minerva, Acta Neurochir, Suppl.51, pp11-13, 1990
23. Tomita M, Gotoh F: Capillary recruitment of the cerebral cortex during CO_2 inhalation. Fact or illusion? J Cereb Blood Flow Metab 10:294, 1990
24. Ohta K, Gotoh F, Tomita M, Tanahashi N, Kobari M, Shinohara T, Terayama Y, Mihara B, Takeda H: Species differences in red blood cell aggregability. In Microcirculation Annual 1990. Tsuchiya M, Asano M, Shozawa T, Eds. Nihon-Igakukan, Tokyo, pp17-18, 1990
25. Takeda H, Tomita M, Fukuuchi Y, Tanhashi N, Kobari M, Shinohara T, Ohta K, Matsuoka S: Photoelectric method for noninvasive repeated measurement of relative cerebral blood flow in small animals. Microcirc Ann; 77-78, 1992.
26. Tomita M, Fukuuchi Y, Amano T, Tanahashi N, Kobari M, Terayama Y, Shinohara T, Matsuoka S, Takeda H: Rapid increase of cortical blood flow in response to local flow stimulus by benzylpenicilllin potassium. J Cerebrl Blood Flow and Metab 13 (Suppl 1): 17, 1993.
27. Kobari M, Fukuuchi Y, Tomita M, Tanahashi N, Shinohara T, Matsuoka S, Takeda:H: Ectopic ventricular beats invaribly reduce cerebral blood volume and blood flow in anesthetized cat. J Cerebrl Blood Flow and Metablism.13 (Suppl 1): 425, 1993.
28. Takeda H, Fukuuchi Y, Tomita M, Tanahashi N, Kobari M, Shinohara T, Ohta K, Matsuoka S: Photoelectric method for noninvasive repeated measurement of relative cerebral blood flow in small animals. J Cereb Blood Flow and Metab 13 (Suppl 1): 805, 1993.
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30. Kobari M, Fukuuchi Y, Tomita M, Tanahashi N, Konno S, Takeda H: Effect of sumatriptan on the cerebral intraparenchymal microcirculation in the cat. Br. J. Pharmacol 110; 1445-1448, 1993.
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33. Kobari M, Fukuuchi Y, Tomita M, Tanahashi N, Konno S, Takeda H: Constriction/dilatation of the cerebral microvessels by intravascular endothelin-1 in cats. J Cereb Blood Flow Metab 14: 64-69, 1994
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35. Kobari M, Fukuuchi Y, Tomita M, Tanahashi N, Takeda H, Yokoyama M: Calcitonin gene-related peptide (CGRP) and the regulation of cerebral parenchymal vessels. Brain Research 698: 95-99, 1995
36. Kobari M, Fukuuchi Y, Tomita M, Tanahashi N, Takeda H: Effects of ventricular arrhythmia on the cerebral microcirculation in cats. Neurol Res 17: 73-77, 1995
37. Kobari M, Fukuuchi Y, Tomita M, Tanahashi N, Shinohara T, Terayama Y, Takeda H, Yokoyama M: Functional role of calcitonin gene-related peptide (CGRP) in the regulation of cerebrocortical microvessels. J Cereb Blood Flow Metab 15 (Suppl 1): S534, 1995
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39. Takao M, Fukuuchi Y, Tomita M, Tanahashi N, Kobari M, Shinohara T, Terayama Y, Takeda H, Yokoyama M, Ito D: Cerebral vasodilatation by adrenomedullin in the cat. J Cereb Blood Flow and Metab 17 (suppl): S350,1997
40. Kobari H, Fukuuchi Y, Tomita M, Tanahashi N, Yokoyama M, Takao M: Tachykinin NK1 receptor mediates substance P-induced dilatation of cerebral parenchymal microvessels in cats. J Cereb Blood Flow and Metab 17 (suppl): S756,1997
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