

## Department of Ophthalmology and Visual Science

### 1. Staff and students (April, 2009)

Professor;	Manabu Mochizuki	
Associate Professor;	Kyoko Ohno-Mastui	
Assistant Professor;	Sunao Sugita,	Yoshiharu Sugamoto
Hospital staff;	Akiko Tanaka,	Takeshi Yoshida,
	Hiroshi Takase,	Kouju Kamoi,
	Kawaguchi Tatsushi,	Miyanaga Masaru
Graduate student;	Noriaki Shimada,	Shintaro Horie,
	Jiyang Wang,	Yukiko Yamada,
	Kengo Hayashi,	Megumi Shimizu,
	Manabu Ogawa,	Moriyama Muka,
	Murai Hideki	

### 2. Purpose of education

Ophthalmology and Visual Science deals with the eye. Main objective of ophthalmology and visual science in the graduate course is to obtain the highly-advanced knowledge in the diagnosis and the treatment of various ocular disorders and to perform the basic research based on clinical experience. The graduate students are expected to be academic doctors who develop and perform highly-qualified ophthalmologists, as well as become scientists who can perform basic research focusing on their clinical interest.

### 3. Research subjects

- 1) Evaluation of the molecular mechanism of immunoregulation in intraocular inflammation
- 2) Pathogenic mechanism of intraocular inflammatory diseases
- 3) Development of novel treatments of intraocular inflammation
- 4) Molecular diagnosis of virus-infected uveitis and intraocular lymphomas.
- 5) Evaluation of the change of the circulation as well as the glucose metabolism in the visual cortex using positron emission tomography (PET) in various ocular disorders
- 6) Mechanism of visual pathway in normal conditions as well as in the patients with amblyopia.
- 7) Development of a novel treatment for vitreoretinal disorders like retinal detachment, diabetic retinopathy, and macular holes.
- 8) Analysis of retinochoroidal complications in high myopia (choroidal neovascularization, myopic tractional retinopathy)
- 9) Evaluation of the molecular mechanism of choroidal angiogenesis using the cultured cells as well as experimental animals (collaboratory project with Department of Cellular Physiological Chemistry)
- 10) Gene analysis of highly myopic patients (collaborator project with Kyoto University)
- 11) Establishment of a novel therapy to prevent an axial elongation or the formation of posterior staphyloma
- 12) Development of new materials for contact lens, the development of a novel drug delivery system using contact lens
- 13) Effect of the visual background on binocular vision as well as the influence of strabismus on dynamic visual acuity.

### 4. Clinical services

Clinical practice is organized by the general ophthalmology clinic as well as the several subspecialty clinics. When the patients visited our department, they are screened in the general clinic, and then the final decision of the diagnosis and treatment is made in cooperation with each subspecialty clinic.

Subspecialty clinics include uveitis clinic, retinal detachment clinic, diabetic retinopathy clinic, neuro-ophthalmology clinic, high myopia clinic, and medical retina clinic.

Approximately, 1,100 surgeries are performed per year (e.g., cataract surgery, vitreoretinal surgery, glaucoma surgery, strabismus surgery).

### 5. Publications

#### [Original Article]

1. Sugita S, Usui Y, Horie S, Futagami Y, Yamada Y, Ma J, Kezuka T, Hamada H, Usui T, Mochizuki M, Yamagami S.

- Human corneal endothelial cells expressing programmed death-ligand 1 (PD-L1) suppress PD-1<sup>+</sup> T helper 1 cells by a contact-dependent mechanism. *Invest Ophthalmol Vis Sci*, 2009; 50: 263-272.
2. Horie C, Kiyosawa M, Mochizuki M, Wakakura M, Oda K, Ishiwata K, Ishii K. Decreased dopamine D<sub>2</sub> receptor binding in essential blepharospasm. *Acta Neurol Scand*, 2009; 119: 49-54.
  3. QingGeLeTu, Suzuki Y, Kiyosawa M, Ishiwata K, Mochizuki M. Functional and neuroreceptor imaging of the brain in bicuculline-induced dystonic rats. *Tohoku J Exp Med*. 2009; 217: 313-20.
  4. Futagami Y, Sugita S, Fujimaki T, Yokoyama T, Morio T, Mochizuki M. Bilateral anterior granulomatous keratouveitis with sunset glow fundus in a patient with autoimmune polyglandular syndrome. *Ocul Immunol Inflamm*. 2009; 17: 88-90.
  5. Nakanishi H, Yamada R, Gogoh N, Hayashi H, Otani A, Tsujikawa A, Yamashiro K, Shimada N, Ohno-Matsui K, Mochizuki M, Saito M, Saito K, Iida T, Matsuda F, Yoshimura N. Absence of association between COL1A1 polymorphisms and high myopia in the Japanese population. *Invest Ophthalmol Vis Sci*, 2009; 50: 544-550.
  6. Shimada N, Ohno-Matsui K, Iwanaga Y, Tokoro T, Mochizuki M. Macular retinal detachment associated with peripapillary detachment in pathologic myopia. *Int Ophthalmol*, 2009; 29: 99-102.
  7. Sugita S, Takase H, Sugamoto Y, Arai A, Miura O, Mochizuki M. Diagnosis of intraocular lymphoma by polymerase chain reaction analysis and cytokine profiling of the vitreous fluid. *Jpn J Ophthalmol*, 2009; 53: 209-214.
  8. Horie S, Sugita S, Futagami Y, Kawaguchi T, Kamoi K, Shirato S, Mochizuki M. Human iris pigment epithelium suppresses activation of bystander T cells via TGF $\beta$ -TGF $\beta$  receptor interaction. *Exp Eye Res*, 2009; 88: 1033-1042.
  9. Sugita S, Usui Y, Horie S, Futagami Y, Aburatani H, Okazaki T, Honjo T, Takeuchi M, Mochizuki M. T-cell suppression by programmed cell death 1 ligand 1 on retinal pigment epithelium during inflammatory conditions. *Invest Ophthalmol Vis Sci*, 2009; 50: 2862-2870.
  10. Hayashi K, Ohno-Matsui K, Teramukai S, Shimada N, Moriyama M, Hayashi W, Yoshida T, Tokoro T, Mochizuki M. Comparison of visual outcome and regression pattern of myopic choroidal neovascularization after intravitreal bevacizumab or after photodynamic. *Am J Ophthalmol*, 2009; 148: 396-408.
  11. Miyanaga M, Sugita S, Shimizu N, Morio T, Miyata K, Maruyama K, Kinoshita S, Mochizuki M. A significant association of viral load with corneal endothelial cell damage in cytomegalovirus anterior uveitis. *Br J Ophthalmol*, 2009; 17: 335-341.
  12. Sugita S, Horie S, Nakamura O, Maruyama K, Takase H, Usui Y, Takeuchi M, Ishidoh K, Koike M, Uchiyama Y, Peters C, Yamamoto Y, Mochizuki M. Acquisition of T cells by eye-derived CTLA-2a during inflammatory conditions. *J Immunol*, 2009; 183: 5013-5022.
  13. Miyanaga M, Shimizu K, Kawaguchi T, Miyata K, Mochizuki M. A clinical survey of uveitis in HTLV-1 endemic region. *Ocul Immunol Inflamm*, 2009; 17: 335-341.
  14. Kamoi K, Yoshida T, Takase H, Yokota M, Kawaguchi T, Mochizuki M. Seroprevalence of Bartonella henselae in patients with uveitis and healthy individuals in Tokyo. *Jpn J Ophthalmol*. 2009; 53:490-493
  15. Ishida T, Ohno-Matsui K, Kaneko Y, Tobita H, Hayashi K, Shimada N, Mochizuki M. Autofluorescence of metastatic choroidal tumor. *Int Ophthalmol*, 2009; 29: 309-313.
  16. Ishida T, Sugamoto Y, Sugita S, Mochizuki M. Prophylactic vitrectomy for acute retinal necrosis. *Jpn J Ophthalmol*, 2009; 53: 486-489.
  17. Herbort CP, Mochizuki M, Rao NA. International criteria for the diagnosis of ocular sarcoidosis: results of the first international workshop on ocular sarcoidosis (IWOS). *Ocul Immunol Inflamm*, 2009; 17: 160-169.
  18. Sasaki S, Funamoto S, Hashimoto Y, Kimura T, Honda T, Hattori S, Kobayashi H, Kishida A, Mochizuki M. In vivo evaluation of a novel scaffold for artificial corneas prepared by using ultrahigh hydrostatic pressure to decellularize porcine corneas. *Molecular Vision*, 2009; 15: 2022-2028.
  19. Rosenzweig HL, Kawaguchi T, Martin TM, Planck SR, Davey MP, Rosenbaum JT. Nucleotide oligomerization domain-2 (NOD2)-induced uveitis is dependent on IFN gamma. *Invest Ophthalmol Vis Sci*. 2009; 50: 1739-1745.
  20. Zhang Z, Zhong W, Spencer DB, Chen H, Lu H, Kawaguchi T, Rosenbaum JT. Interleukin-17 causes neutrophil mediated inflammation in ovalbumin-induced uveitis in DO11.10 mice. *Cytokine*. 2009; 46: 79-91.
  21. Emoto Y, Emoto H, Fujie W, Wakakura M: Prolonged Constant Eye Misalignment Leads to failure to Develop Binocular Vision in Childhood Ocular Myasthenia Gravis. *J Pediatr Ophthalmol Strabismus* , 2009; 46: 358-361.
  22. Miyanaga M, Nejima R, Miyai T, Miyata K, Ohashi Y, Inoue Y, Toyokawa M, Asari S. Changes in drug susceptibility and the quinolone-resistance determining region of Staphylococcus epidermidis after administration of fluoroquinolones. *J Cataract Refract Surg*, 2009; 35: 1970-1978.
  23. Wang J, Ohno-Matsui K, Yoshida T, Kojima A, Shimada N, Ichinose S, Sato T, Mochizuki M, Morita I. Amyloid-b

upregulates complement factor B in retinal pigment epithelial cells through cytokines released from recruited macrophages/microglia: Another mechanism of complement activation in age-related macular degeneration. *J Cell Physiol*, 2009; 220:119-128

24. Ohno-Matsui K, Shimada N, Moriyama M, Tokoro T, Mochizuki M. A case of chronic central serous chorioretinopathy on the border of a posterior staphyloma in an eye with pathologic myopia. *Jpn J Ophthalmol*, 2009;53:282-284
25. Shimada N, Ohno-Matsui K, Iwanaga Y, Tokoro T, Mochizuki M. Macular retinal detachment associated with peripapillary detachment in pathologic myopia. *Int Ophthalmol*, 2009;29:99-102

[Review Article]

1. Sugita S. Role of ocular pigment epithelial cells in immune privilege. *Arch.Immunol. Ther. Exp.* 2009;57:263-8.

[Presentation]

1. Mochizuki M. CSF findings on the prognosis of VKH. 6<sup>th</sup> International Workshop on Vogt-Koyanagi-Harada disease & Sympathetic Ophthalmia and 2<sup>nd</sup> International Workshop on Sarcoidosis, Singapore, 2009.2.27.
2. Hanada A, Takase H, Mochizuki M. Effect of system corticosteroid treatment on visual acuity in patients with uveitis with sarcoidosis. 6<sup>th</sup> International Workshop on Vogt-Koyanagi-Harada disease & Sympathetic Ophthalmia and 2<sup>nd</sup> International Workshop on Sarcoidosis, Singapore, 2009.2.28.
3. Mochizuki M. Regional immunity of the eye. SOIE Course: a Comprehensive and up to date Approach to Uveitis: The Basics and Beyond, 10<sup>th</sup> International Congress of the Middle East African Council of Ophthalmology, Bahrain, 2009.3.29.
4. Mochizuki M. Behcet's disease Japan experience. SOIE Course: a Comprehensive and up to date Approach to Uveitis: The Basics and Beyond, 10<sup>th</sup> International Congress of the Middle East African Council of Ophthalmology, Bahrain, 2009.3.29.
5. Mochizuki M. Sarcoidosis. SOIE Course: a Comprehensive and up to date Approach to Uveitis: The Basics and Beyond, 10<sup>th</sup> International Congress of the Middle East African Council of Ophthalmology, Bahrain, 2009.3.29.
6. Mochizuki M. Intraocular fluid analysis. SOIE Course: a Comprehensive and up to date Approach to Uveitis: The Basics and Beyond, 10<sup>th</sup> International Congress of the Middle East African Council of Ophthalmology, Bahrain, 2009.3.29.
7. ESasaki S, Funamoto S, Hashimoto Y, Kimura T, Honda T, Hattori S, Kobayashi H, Kishida A, Mochizuki M. Novel scaffold for artificial cornea prepared by decellularization of cornea using ultra-high hydrostatical pressurization treatment. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2009.5.4.
8. Mochizuki M. Monoclonal antibody therapies translating from animal to man. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2009.5.6.
9. Nakanishi H, Gotoh N, Yamashiro K, Hayashi H, Shimada N, Ohno-Matsui K, Mochizuki M, Saito M, Iida T, Yoshimura N. ARMS2/HTRA1 polymorphisms are not associated with choroidal neovascularization in highly myopic eyes of elderly Japanese population. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2009.5.6.
10. Rosenzweig HL, Kawaguchi T, Sawkar H, Planck SR, Martin TM, Davey MP, Rosenbaum JT. Identification of IFN gamma as a novel regulator of NOD2-mediated uveitis. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2009.5.7.
11. Nguyen DT, Emoto Y, Emoto H, Wang M, Zavora T, Avakian A, Aggarwal D, Levendowski DJ, Sebag J, Sadun AA. Assessment of sleep apnea in NAION patients. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2009.5.7.
12. Planck SR, Kawaguchi T, Vance EE, Rosenbaum JT. A novel model to study the interaction of T cells and B cells in autoimmune uveitis. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2009.5.7.
13. Kyoko Ohno-Matsui. Bevacizumab for myopic choroidal neovascularization. APAO · AAO joint congress, Bali 2009, Bali, Indonesia, 5.19.2009
14. Sugita S, Shimizu N, Watanabe K, Katayama M, Horie S, Takase H, Sugamoto Y, Mochizuki M. Use of broad-range quantitative polymerase chain reaction in the diagnosis of bacterial endophthalmitis. 10<sup>th</sup> International Ocular Inflammation Society Congress, Prague(Austria), 2009.5.30.

15. Horie S, Sugita S, Futagami Y, Yamada Y, Mochizuki M. Human retinal pigment epithelium-induced CD4<sup>+</sup>CD25<sup>+</sup> regulatory T cells suppress activation of intraocular effector T cells. 10<sup>th</sup> International Ocular Inflammation Society Congress, Prague(Austria), 2009.5.30.
16. Kyoko Ohno-Matsui. Age-related macular degeneration -Alzheimer's disease in the eye? EVER, Portoroz, Slovenia, 10.2.2009