

Department of Nephrology

1. Staffs and Students (April, 2009)

Professor	Sei SASAKI	
Associate Professor	Shinichi UCHIDA	Tatemitsu RAI (Dept. of Blood Purification)
Junior Associate Professor	Tomokazu OKADO	
Assistant Professor	Eisei SOHARA	Akihito OHTA (Dept. of Blood Purification)
	Eriko OHTA (Dept. of Blood Purification)	
Project Associate Professor	Yumi NODA	
Hospital Staff	Koichiro SUSA	Masanobu AKAZAWA
	Satomi SHIKUMA	Shigeru TAKADA (Dept. of Blood Purification)
	Kiyoshi ISOBE (Dept. of Blood Purification)	
Secretary	Asa MURANO,	Miki SAKIYAMA,
	Yukiko ITO	
Graduate Student	Naofumi YUI	Shotaro NAITO
	Kayoko ETO	Naohiro NOMURA
	Katsuyuki OI	Gulibaha TALATI
	Mai WAKABAYASHI	Hidenori NISHIDA
	Muhammad Zakir Hossain Khan	

2. Purpose of Education

The policy of the *Department of Nephrology* is to accomplish trustworthy medicine and to educate excellent academic scientists and nephrologists.

Our department is one of the initial institutes that started the hemodialysis therapy in Japan, and thus, has a long experience of clinical practice of kidney diseases. Through the activities our department has brought up a number of leading nephrologists who contribute to establishing nephrology in Japan and in the world. Academic research is another important mission of our department. Research from bench experiments to clinical studies has been performed to understand the pathogenesis of the diseases and to develop new therapeutic strategies. Especially, our study on “water-electrolyte transport in the kidney and related diseases” is well known worldwide for its originality and high quality. We hope new young scientists and physicians join us for future science and nephrology.

3. Research Subjects

We have been studying renal membrane transporters and channels for more than 20 years. Most of the AQP water channels and CLC chloride channels were cloned in our laboratory in 1990s (*Nature*1993, *PNAS*1994, *JBC*1993&1994, *Neuron*1994, etc) and the physiological roles in vivo have been analyzed by generating the KO mice (*Nature Genet*1999, *PNAS*2006, etc). Recently, we are interested in regulators of transporters and channels (*JCB*2008), and discovered a novel kinase cascade (WNK-OSR1/SPAK-NCC) regulating NaCl balance in the body (*Cell Metab* 2007). Based on the molecular mechanisms we identified, we hope to find the way to regulate renal transporters and channels.

4. Clinical Services

We are taking care of a variety of kidney diseases including acute kidney injury, chronic kidney disease, blood purification, and renal transplantation. We routinely perform renal biopsy.

5. Publications

Original Article

1. Hanada S, Iwamoto M, Kobayashi N, Ando R, Sasaki S. Calcium-alkali syndrome due to vitamin D administration and magnesium oxide administration. *Am. J. Kidney Dis.* 53: 711-4, 2009.
2. Hanada S, Iwamoto M, Kobayashi N, Ando R, Sasaki S. Catheter-related bacteremia caused by agrobacterium radiobacter in a hemodialysis patient. *Intern. Med.* 48:455-7, 2009.
3. Kurosawa S, Akiyama N, Ohwada A, Warabi M, Suenaga M, Kojima M, Tomiyama J. Idiopathic plasmacytic lymphadenopathy with polyclonal hypergammaglobulinemia accompanied with cutaneous involvement and renal dysfunction. *Jpn. J. Clin. Oncol.* 10:682-5, 2009.
4. Kuwahara M, Inoshita S, Terada Y, Sasaki S. Effect of sevelamer hydrochloride on bone in experimental uremic

- rats. *Ther Apher Dial.* 13:42-8, 2009.
5. Li YH, Eto K, Horikawa S, Uchida S, Sasaki S, Li XJ, Noda Y. Aquaporin-2 regulates cell volume recovery via tropomyosin. *Int. J. Biochem. Cell Biol.* 41:2466-2476, 2009.
 6. Maeda Y, Uno T, Yoshida A, Takahashi A, Inaba N, and Shiigai T. Nontuberculous mycobacterial peritonitis in a patient undergoing continuous ambulatory peritoneal dialysis. *J. Rural Med.* 4:75-79, 2009.
 7. Mitaka C, Tsuchida N, Kawada K, Nakajima Y, Imai T, Sasaki S. A longer duration of polymyxin B-immobilized fiber column hemoperfusion improves pulmonary oxygenation in patients with septic shock. *Shock.* 32:478-83, 2009.
 8. Ohta A, Rai T, Yui N, Chiga M, Yang SS, Lin SH, Sohara E, Sasaki S, Uchida S. Targeted disruption of the Wnk4 gene decreases phosphorylation of Na-Cl cotransporter, increases Na excretion and lowers blood pressure. *Hum. Mol. Genet.* 18:3978-86, 2009.
 9. Ohta E, Itoh T, Nemoto T, Kumagai J, Ko SB, Ishibashi K, Ohno M, Uchida K, Ohta A, Sohara E, Uchida S, Sasaki S, Rai T. Pancreas-specific aquaporin 12 null mice showed increased susceptibility to caerulein-induced acute pancreatitis. *Am. J. Physiol. Cell Physiol.* 297:1368-78, 2009.
 10. Saito T, Saito T, Kasono K, Otani T, Tamemoto H, Kawakami M, Sasaki S, Ishikawa S. Vasopressin-dependent upregulation of aquaporin-2 gene expression in aged rats with glucocorticoid deficiency. *Acta. Physiol.* 196:239-47, 2009.
 11. Tsukamoto Y, Wang H, Becker G, Chen HC, Han DS, Harris D, Imai E, Jha V, Li PK, Lee EJ, Matsuo S, Tomino Y, Tungsanga K, Yamagata K, Hishida A. Report of the Asian Forum of Chronic Kidney Disease Initiative (AFCKDI) 2007. "Current status and perspective of CKD in Asia": diversity and specificity among Asian countries. *Clin. Exp. Nephrol.* 13: 249-256, 2009.
 12. Yui N, Okutsu R, Sohara E, Rai T, Ohta A, Noda Y, Sasaki S, Uchida S. FAPP2 is required for aquaporin-2 apical sorting at trans-Golgi network in polarized MDCK cells. *Am. J. Physiol. Cell Physiol.* 297:1389-1396, 2009.
 13. Vallon V, Schroth J, Lang F, Kuhl D, Uchida S. Expression and phosphorylation of the Na⁺-Cl⁻ cotransporter NCC in vivo is regulated by dietary salt, potassium, and SGK1. *Am. J. Physiol. Renal Physiol.* 297:704-12, 2009.

Review Article

1. Ishibashi K, Hara S, Kondo S. Aquaporin water channels in mammals. *Clin. Exp. Nephrol.*13:107-117, 2009.
2. Kawasaki T, Uchino J, Shinoda T, Kawanishi H. Guidance of technical management of dialysis water and dialysis fluid for the Japan association for clinical engineering technologists. *Blood Purif.* 27 (Suppl. 1) : 41-49, 2009.
3. Sohara E, Uchida S, Sasaki S. Function of aquaporin-7 in the kidney and the male reproductive system. *Handb Exp Pharmacol.*219-31, 2009. Review.
4. Tomo T, Shinoda T. Standardization of water purification in the central dialysis fluid delivery system: validation and parametric method. *Blood Purif.* 27 (Suppl. 1) : 36-40, 2009.