Molecular Epidemiology

1. Staffs and Students (April, 2010)

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2. Education

Many common diseases such as diabetes, hypertension, obesity, metabolic syndrome, and atherosclerosis are caused by multiple genetic and environmental factors. We aim to decipher these factors as well as their interactions by applying the technology and information of human genome to epidemiology. Our goal is not only to identify disease genes and polymorphisms but also to elucidate gene-environment interactions that contribute to the onset and progression of the diseases. New projects to study the role of epigenetic changes in common diseases have also started.

3. Research Subjects

1. Gene-environment interaction that affects the onset of metabolic syndrome and its related phenotypes.
2. Genetic factors that affect the severity of pathological atherosclerosis.
3. Responder vs non-responder of prodrugs and polymorphisms of drug metabolizing enzymes.
4. Severe cutaneous adverse response (Stevens-Jhonson' s Syndrome) and HLA genotypes.
5. The role of epigenetic regulation and fetal programming in common diseases.

4. Publications

1. Miyaki K, Oo T, Song Y, Lwin H, Tomita Y, Hoshino H, Suzuki N, Muramatsu M: Association of a cyclin-dependent kinase 5 regulatory subunit-associated protein 1-like 1 (CDKAL1) polymorphism with elevated hemoglobin A1c levels and the prevalence of metabolic syndrome in Japanese men: Interaction with dietary energy intake. Am J Epidemiol. 172:985-991, 2010.
2. Miyaki K, Oo T, Song Y, Lwin H, Tomita Y, Hoshino H, Suzuki N, Muramatsu M. Miyaki et al. Respond to "Gene x Lifestyle Interactions" Am J Epidemiol. 172:998–999, 2010
3. Zhang L, Miyaki K, Wang W, Muramatsu M. CYP3A5 polymorphism and sensitivity of Blood Pressure to dietary salt. J Hum Hypertens 24:345-350, 2010
4. Zhang L, Dai Y, Bian L, Wang W, Wang W, Muramatsu M, Hua Q. Association of the cell death-inducing DNA fragmentation factor alpha-like effector A (CIDEA) gene V115F (G/T) polymorphism with phenotypes of metabolic syndrome in a Chinese population. Diabetes Res Clin Pract. 91:233-238, 2010
5. Fujimoto K, Ikeda S, Arai T, Tanaka N, Kumasaka T, Ishii T, Kida K, Muramatsu M, Sawabe M. Polymorphism of SERPINE2 gene is associated with pulmonary emphysema in consecutive autopsy cases BMC Med Genet 11:159, 2010
6. Matsunaga T, Kuwata S, Muramatsu M. Computational gene knockout reveals transdisease-transgene association structure. J Bioinform Comput Biol. 8:843-66, 2010
7. Kaniwa N, Saito Y, Aihara M, Matsunaga K, Tohkin M, Kurose K, Furuya H, Takahashi Y, Muramatsu M, Kinoshita S, Abe M, Ikeda H, Kashiwagi M, Song Y, Ueta M, Sotozono C, Ikezawa Z, Hasegawa R; JSAR research group. HLA-B*1511 is a risk factor for carbamazepine-induced Stevens-Johnson syndrome and toxic epidermal necrolysis in Japanese patients. Epilepsia. 51:2461-2465, 2010
8. Ikeda H, Takahashi Y, Yamazaki E, Fujiwara T, Kaniwa N, Saito Y, Aihara M, Kashiwagi M, Muramatsu M. HLA class I markers in Japanese patients with carbamazepine-induced cutaneous adverse reactions. Epilepsia 51:297-300, 2010

9. Yokoyama K, Urashima M, Ohkido I, Kono T, Yoshida T, Muramatsu M, Niu T, Hosoya T. L-type voltage-dependent calcium channel alpha subunit 1C is a novel candidate gene associated with secondary hyperparathyroidism: an application of haplotype-based analysis for multiple linked single nucleotide polymorphisms. Nephron Clin Pract. 115:237-243, 2010
10. Karasawa S, Daimon M, Sasaki S, Toriyama S, Oizumi T, Susa S, Kameda W, Wada K, Muramatsu M, Fukao A, Kubota I, Kawata S, Kayama T, Kato T. Association of the common fat mass and obesity associated (FTO) gene polymorphism with obesity in a Japanese population. Endocr J. 57:293-301, 2010
11. Daimon M, Oizumi T, Karasawa S, Kaino W, Takase K, Tada K, Jimbu Y, Wada K, Kameda W, Susa S, Muramatsu M, Kubota I, Kawata S, Kato T. Association of the clusterin gene polymorphisms with type 2 diabetes mellitus. Metabolism. 60:815-822, 2011