

Syoreihi: 225192) to HK. We thank Ms. Emi Nakai for assistance with ES screening.

#### Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.bbrc.2013.02.015>.

#### References

- [1] J. Suzuki, A. Takaku, Cerebrovascular “moyamoya” disease. Disease showing abnormal net-like vessels in base of brain, *Arch. Neurol.* 20 (1969) 288–299.
- [2] R.M. Scott, E.R. Smith, Moyamoya disease and moyamoya syndrome, *N. Engl. J. Med.* 360 (2009) 1226–1237.
- [3] D.S. Kainth, S.A. Chaudhry, H.S. Kainth, F.K. Suri, A.I. Qureshi, Prevalence and characteristics of concurrent down syndrome in patients with moyamoya disease, *Neurosurgery* 72 (2013) 210–215.
- [4] K. Okazaki, A. Kakita, H. Tanaka, K. Kimura, M. Minagawa, T. Morita, H. Takahashi, Widespread ischemic brain lesions caused by vasculopathy associated with neurofibromatosis type 1, *Neuropathology* 30 (2010) 627–633.
- [5] M.B. Bober, N. Khan, J. Kaplan, K. Lewis, J.A. Feinstein, C.I. Scott Jr., G.K. Steinberg, Majewski osteodysplastic primordial dwarfism type II (MOPD II): expanding the vascular phenotype, *Am. J. Med. Genet. A* 152A (2010) 960–965.
- [6] A.J. Anwar, J.D. Walker, B.M. Frier, Type 1 diabetes mellitus and Down's syndrome: prevalence, management and diabetic complications, *Diabet. Med.* 15 (1998) 160–163.
- [7] M. Kamoun, N. Charfi, N. Rekik, M.F. Mnif, F. Mnif, H. Kmiha, Z. Mnif, M. Abid, Neurofibromatosis and Type 1 diabetes mellitus: an unusual association, *Diabet. Med.* 26 (2009) 1180–1181.
- [8] R.S. Bower, G.W. Mallory, M. Nwojo, F.B. Meyer, Y.C. Kudva, Diabetes mellitus and the moyamoya syndrome, *Ann. Intern. Med.* 157 (2012) 387–388.
- [9] W. Liu, D. Morito, S. Takashima, Y. Mineharu, H. Kobayashi, T. Hitomi, H. Hashikata, N. Matsuura, S. Yamazaki, A. Toyoda, K. Kikuta, Y. Takagi, K.H. Harada, A. Fujiyama, R. Herzig, B. Kirschek, L. Zou, J.E. Kim, M. Kitakaze, S. Miyamoto, K. Nagata, N. Hashimoto, A. Koizumi, Identification of RNF213 as a susceptibility gene for moyamoya disease and its possible role in vascular development, *PLoS One* 6 (2011) e22542.
- [10] R.J. Deshaies, C.A. Joazeiro, RING domain E3 ubiquitin ligases, *Annu. Rev. Biochem.* 78 (2009) 399–434.
- [11] S.R. White, B. Luring, AAA + ATPases: achieving diversity of function with conserved machinery, *Traffic* 8 (2007) 1657–1667.
- [12] M. Yoshioka, T. Kayo, T. Ikeda, A. Koizumi, A novel locus, Mody4, distal to D7Mit189 on chromosome 7 determines early-onset NIDDM in nonobese C57BL/6 (Akita) mutant mice, *Diabetes* 46 (1997) 887–894.
- [13] J. Wang, T. Takeuchi, S. Tanaka, S.K. Kubo, T. Kayo, D. Lu, K. Takata, A. Koizumi, T. Izumi, A mutation in the insulin 2 gene induces diabetes with severe pancreatic beta-cell dysfunction in the Mody mouse, *J. Clin. Invest.* 103 (1999) 27–37.
- [14] J. Nozaki, H. Kubota, H. Yoshida, M. Naitoh, J. Goji, T. Yoshinaga, K. Mori, A. Koizumi, K. Nagata, The endoplasmic reticulum stress response is stimulated through the continuous activation of transcription factors ATF6 and XBP1 in Ins2<sup>+/Akita</sup> pancreatic beta cells, *Genes Cells* 9 (2004) 261–270.
- [15] J. Miyazaki, K. Araki, E. Yamato, H. Ikegami, T. Asano, Y. Shibasaki, Y. Oka, K. Yamamura, Establishment of a pancreatic beta cell line that retains glucose-inducible insulin secretion: special reference to expression of glucose transporter isoforms, *Endocrinology* 127 (1990) 126–132.
- [16] M. Toyoshima, A. Asakawa, M. Fujimiya, K. Inoue, S. Inoue, M. Kinboshi, A. Koizumi, Dimorphic gene expression patterns of anorexigenic and orexigenic peptides in hypothalamus account male and female hyperphagia in Akita type 1 diabetic mice, *Biochem. Biophys. Res. Commun.* 352 (2007) 703–708.
- [17] M.S. Martin-Gronert, S.E. Ozanne, Metabolic programming of insulin action and secretion, *Diabetes Obes. Metab.* 14 (Suppl. 3) (2012) 29–39.
- [18] S.J. Marciniak, C.Y. Yun, S. Oyadomari, I. Novoa, Y. Zhang, R. Jungreis, K. Nagata, H.P. Harding, D. Ron, CHOP induces death by promoting protein synthesis and oxidation in the stressed endoplasmic reticulum, *Genes Dev.* 18 (2004) 3066–3077.
- [19] S. Yamane, Y. Hamamoto, S. Harashima, N. Harada, A. Hamasaki, K. Toyoda, K. Fujita, E. Joo, Y. Seino, N. Inagaki, GLP-1 receptor agonist attenuates endoplasmic reticulum stress-mediated  $\beta$ -cell damage in Akita mice, *J. Diabetes Invest.* 2 (2011) 104–110.
- [20] A. Jurczyk, S.C. Pino, B. O'Sullivan-Murphy, M. Addorio, E.A. Lidstone, P. Diiorio, K.L. Lipson, C. Standley, K. Fogarty, L. Lifshitz, F. Urano, J.P. Mordes, D.L. Greiner, A.A. Rossini, R. Bortell, A novel role for the centrosomal protein, pericentrin, in regulation of insulin secretory vesicle docking in mouse pancreatic beta-cells, *PLoS One* 5 (2010) e11812.
- [21] J.R. Allen, L.X. Nguyen, K.E. Sargent, K.L. Lipson, A. Hackett, F. Urano, High ER stress in beta-cells stimulates intracellular degradation of misfolded insulin, *Biochem. Biophys. Res. Commun.* 324 (2004) 166–170.
- [22] M. Liu, I. Hodish, C.J. Rhodes, P. Arvan, Proinsulin maturation, misfolding, and proteotoxicity, *Proc. Natl. Acad. Sci. USA* 104 (2007) 15841–15846.

