

Scientific Background/ References

Agren JJ, Vidgren HM, Valve RS, Laakso M, Uusitupa MI (2001): Postprandial responses of individual fatty acids in subjects homozygous for the threonine- or alanine-encoding allele in codon 54 of the intestinal fatty acid binding protein 2 gene. *Am J Clin Nutr*, 73(1): S. 31-5.

Albala C, Santos JL, Cifuentes M, Villarroel AC, Lera L, Liberman C, Angel B, Pérez-Bravo F. (2004): Intestinal FABP2 A54T polymorphism: association with insulin resistance and obesity in women. *Obes Res* 12(2): S. 340-5.

van't Hooft FM, Ruotolo G, Boquist S, de Faire U, Eggertsen G, Hamsten A. Human evidence that the apolipoprotein A-II gene is implicated in visceral fat accumulation and metabolism of triglyceride-rich lipoproteins. *Circulation* 104: S. 1223–1228.

Arner P, Hoffstedt J (1999): Adrenoceptor genes in human obesity. *J Intern Med* 245: S. 667–672.

Arner, P. (2001): Genetic variance and lipolysis regulation: Implications for obesity. *Annals de Medicina* 33(8): S. 542–546.

Aubert R, Betoulle D, Herbeth B, Siest G, Fumeron F (2000): 5-HT_{2A} receptor gene polymorphism is associated with food and alcohol intake in obese people. *Int J Obes Relat Metab Disord* 24: S. 920–924.

Baier LJ, Sacchettini JC, Knowler WC, Eads J, Paolisso G, Tataranni PA, Mochizuki H, Bennett P H, Bogardus C, M Prochazka (1995): An amino acid substitution in the human intestinal fatty acid binding protein is associated with increased fatty acid binding, increased fat oxidation, and insulin resistance. *J Clin Invest* 95: S. 1281–1287.

Barber P, Millet L, Galitzki J, Lafontan M, Berlan M (1996). In situ assessment of the role of beta 1-, beta 2-, and beta 3-adrenoreceptors in the control of lipolysis and nutritive blood flow in human subcutaneous adipose tissue. *British Journal of Pharmacology* 117, S. 907–913.

Bastard JP, Maachi M, Tran Van Nhieu J, Jardel C, Bruckert E, Grimaldi A, Robert JJ, Capeau J, Hainque B (2002): Adipose tissue IL-6 content correlates with resistance to insulin activation of glucose uptake both in vivo and in vitro. *J Clin Endocrinol Metab* 87: S. 2084–2089.

Bengtsson K, Orho-Melander M, Melander O, Lindblad U, Ranstam J, Rastam L, Groop L (2001): α 2 adrenergic receptor gene variation and hypertension in subjects with type 2 diabetes. *Hypertension* 37: S. 1303–1308.



Berthier MT, Paradis AM, Tchernof A, Bergeron J, Prud'homme D, Despres JP, Vohl MC (2003): The interleukin 6–174G/C polymorphism is associated with indices of obesity in men. *J Hum Genet* 48: S. 14–19.

Bouchard C, Perusse L, Rice T, Rao D (1998): The genetics of human obesity. In: Bray GA, Bouchard C, James WPT (Hrsg.): *Handbook of Obesity* (Marcel Dekker Inc.) New York, Basel, Honkong. 2

Bougoulia M, Triantos A, Koliakos G (2006): Plasma interleukin-6 levels, glutathione peroxidase and isoprostane in obese women before and after weight loss. Association with cardiovascular risk factors. *Hormones (Athens)* 5, S. 192–199.

Cardellini M, Perego L, D'Adamo M, Marini MA, Procopio C, Hribal ML, Andreozzi F, Frontoni S, Giacomelli M, Paganelli M, Pontiroli AE, Lauro R, Folli F, Sesti G (2005): C174G polymorphism in the promoter of the interleukin-6 gene is associated with insulin resistance. *Diabetes Care* 28: S. 2007–2012.

Carlsson M, Orho-Melander M, Hedenbro J, Almgren P, Groop LC (2000) The T 54 allele of the intestinal fatty acid-binding protein 2 is associated with a parental history of stroke. *J Clin Endocrinol Metab* 85: S. 2801–2804.

Castellani LW, Goto AM, Lusis AJ (2001): Studies with apolipoprotein A-II transgenic mice indicate a role for HDLs in adiposity and insulin resistance. *Diabetes* 50: S. 643–651.

Castellano M, Rossi F, Giacche M, Perani C, Rivadossi F, Muiesan ML, Salvetti M, Beschi M, Rizzoni D, Agabiti-Rosei E (2003): 2-Adrenergic receptor gene polymorphism, age, and cardiovascular phenotypes. *Hypertension* 41: S. 361–367.

Chistiakov DA, Potapov VA, Khodirev DS, Shamkhalova, MS, Shestakova MV, Nosikov VV (2010): The PPARgamma Pro12Ala variant is associated with insulin sensitivity in Russian normoglycaemic and type 2 diabetic subjects. *Diab Vasc Dis Res* 7, S. 56–62.

Chou YC, Tsai CN, Lee YS, Pei JS (2012): Association of adrenergic receptor gene polymorphisms with adolescent obesity in Taiwan. *Pediatr Int* 54(1): S. 111-116.

Cimponeriu D, Serafinceanu C, Apostol P, Toma M, Stavarachi M, Radu I, Craciun AM, Spandole S, Nicolae P, Rusu L, Schiopu OM, Ion DA (2013): Potential association of obesity with IL6 G-174C polymorphism and TTV infections. *8(7)*, S. 625-632.

Clement K, Vaisse C, Manning BS, Basdevant A, Guy-Grand B, Ruiz J, Silver KD, Shuldiner AR, Froguel P, Strosberg AD (1995): Genetic variation in the 3-adrenergic receptor and an increased capacity to gain weight in patients with morbid obesity. *N Engl J Med*. 333: S. 352–354.



Cole SA, Mitchell BD, Hsueh WC, Pineda P, Beamer BA, Shuldiner AR, Comuzzie AG, Blangero J, Hixson JE (2000): The Pro12Ala variant of peroxisome proliferator-activated receptor-gamma2 (PPAR-gamma2) is associated with measures of obesity in Mexican Americans. *Int J Obes Relat Metab Disord* 24(4): S. 522-524.

Corbalán MS, Marti A, Forga L, Martínez-Gonzalez MA, Martínez JA (2002): The risk of obesity and the Trp64Arg polymorphism of the beta(3)-adrenergic receptor: effect modification by age. *Ann Nutr Metab* 46(3-4):152-158.

Corbalán MS, Marti A, Forga L, Martínez-González MA, Martínez JA.; The 27Glu polymorphism of the beta2-adrenergic receptor gene interacts with physical activity influencing obesity risk among female subjects. *Clin Genet* 61(4): S. 305-307.

Corella D, Arnett DK, Tsai MY, Kabagambe EK, Peacock JM, Hixson JE, Straka RJ, Province M, Lai CQ, Parnell LD, Borecki I, Ordovas JM (2007): The-256T>C polymorphism in the apolipoprotein A-II gene promoter is associated with body mass index and food intake in the genetics of lipid lowering drugs and diet network study. *Clin Chem* 53, S. 1144-1152.

Corella D, Peloso G, Arnett DK, Demissie S, Cupples LA, Tucker K, Lai CQ, Parnell LD, Coltell O, Lee YC, Ordovas JM (2009): APOA2, dietary fat, and body mass index: replication of a gene-diet interaction in 3 independent populations. *Arch Intern Med* 169: 1897-1906.

Corella D, Tai ES, Sorlí JV, Chew SK, Coltell O, Sotos-Prieto M, García-Rios A, Estruch R, Ordovas JM (2011): Association between the APOA2 promoter polymorphism and body weight in Mediterranean and Asian populations: replication of a gene-saturated fat interaction. *Int J Obes* 35(5): S. 666–675.

de Luis DA, Aller R, Izaola O, Sagrado MG, Conde R (2006): Influence of ALA54THR polymorphism of fatty acid binding protein 2 on lifestyle modification response in obese subjects. *Ann Nutr Metab* 50(4): S. 354-360.

Dedoussis GV, Manios Y, Kourlaba G, et al. An age-dependent diet-modified effect of the PPARgamma Pro12Ala polymorphism in children. *Metabolism*. 2011;60(4): S. 467-73.

Deeb SS, Fajas L, Nemoto M, Pihlajamäki J, Mykkänen L, Kuusisto J, Laakso M, Fujimoto W, Auwerx J (1998): A Pro12Ala substitution in PPARgamma2 associated with decreased receptor activity, lower body mass index and improved insulin sensitivity. *Nat Genet* 20(3): S. 284-287.

Delgado-Lista J, Perez-Jimenez F, Tanaka T, Perez-Martinez P, Jimenez-Gomez Y, Marin C, Ruano J, Parnell L, Ordovas JM, Lopez-Miranda J (2007): An apolipoprotein A-II polymorphism (-265T/C, rs5082) regulates postprandial response to a saturated fat overload in healthy men. *J Nutr* 137: S. 2024-2028.



Desvergne, B., & Wahli, W. (1999). Peroxisome proliferator-activated receptors: nuclear control of metabolism. *Endocrine Reviews*, 20(5), 649–688.

Dina C, Meyre D, Gallina S, Durand E, Körner A, Jacobson P, Carlsson LM, Kiess W, Vatin V, Lecoœur C, Delplanque J, Vaillant E, Pattou F, Ruiz J, Weill J, Levy-Marchal C, Horber F, Potoczna N, Hercberg S, Le Stunff C, Bougnères P, Kovacs P, Marre M, Balkau B, Cauchi S, Chèvre JC, Froguel P (2007): Variation in FTO contributes to child-hood obesity and severe adult obesity. *Nat Genet* 39: S. 724-726.

Dionne IJ, Turner AN, Tchernof A, Pollin TI, Avrithi D, Gray D, Shuldi ET (2001): Identification of an interactive effect of b3- and a2b-adrenoceptor gene polymorphisms on fat mass in Caucasian women. *Diabetes* 50: S. 91-95.

Eder K, Baffy N, Falus A, Fulop AK (2009): The major inflammatory mediator interleukin-6 and obesity. *Inflamm Res* 58, S. 727-736.

Ehrenborg E, Skogsberg J, Ruotolo G, Large V, Eriksson P, Arner P, Hamsten A (2000): The Q/E27 polymorphism in the beta2-adrenoceptor gene is associated with increased body weight and dyslipoproteinaemia involving triglyceride-rich lipoproteins. *J Intern Med* 247: S. 651-656.

Emorine L, Blin N, Strosberg AD (1994): The human beta 3-adrenoceptor: the search for a physiological function. *Trends Pharmacol Sci* 15: S. 3-7. 4

Enocksson S, Shimizu M, Lonnqvist E, Nordenstrom J, Arner P (1995): Demonstration of an in vivo functional beta 3-adrenoceptor in man. *J Clin Invest* 95: S. 2239-2245.

Enocksson S, Shimizu M, Lonnqvist F, Nordenstrom J, Arner P (1995): Demonstration of an in vivo functional beta3-adrenoreceptor in man. *J Clin Invest* 95: S. 2239-2245.

Ereqat S, Nasereddin A, Azmi K, Abdeen Z, Amin R (2009): Impact of the Pro12Ala polymorphism of the PPAR-gamma 2 gene on metabolic and clinical characteristics in the palestinian type 2 diabetic patients. *PPAR Res* 2009, S. 1-5.

Fernandez-Real JM, Vayreda M, Richart C, Gutierrez C, Broch M, Vendrell J, Ricart W (2001): Circulating interleukin 6 levels, blood pressure, and insulin sensitivity in apparently healthy men and women. *J Clin Endocrinol Metab* 86: S. 1154-1159.

Fischer CP (2006): Interleukin-6 in acute exercise and training: what is the biological relevance? *Exercise immunology review* 12, S. 6-33.

Fischer CP, Hiscock NJ, Penkowa M, Basu S, Vessby B, Kallner A, Sjöberg LB and Pedersen BK (2004): Supplementation with vitamins C and E inhibits the release of interleukin-6 from contracting human skeletal muscle. *J Physiol* 558: S. 633-645.

Flatt, JP (1996): Glycogen levels and obesity. *Int J Obes* 20(suppl. 2), S. 1-11.



Franks PW, Jablonski KA, Delahanty L, et al. The Pro12Ala variant at the peroxisome proliferator-activated receptor gamma gene and change in obesity-related traits in the Diabetes Prevention Program. *Diabetologia*. 2007;50(12):2451-60.

Franks PW, Luan J, Browne PO, Harding AH, O'Rahilly S, Chatterjee VK, Wareham NJ (2004): Does peroxisome proliferator-activated receptor gamma genotype (Pro12Ala) modify the association of physical activity and dietary fat with fasting insulin level? *Metabolism* 53: S. 11-16.

Franks PW, Mesa JL, Harding AH, Wareham NJ (2007): Gene-lifestyle interaction on risk of type 2 diabetes. *Nutr Metab Cardiovasc Dis* 17: S. 104-124.

Frayling TM, Timpson NJ, Weedon MN, Zeggini E, Freathy RM, Lindgren CM, Perry JR, Elliott KS, Lango H, Rayner NW, Shields B, Harries LW, Barrett JC, Ellard S, Groves CJ, Knight B, Patch AM, Ness AR, Ebrahim S, Lawlor DA, Ring SM, Ben-Shlomo Y, Jarvelin MR, Sovio U, Bennett AJ, Melzer D, Ferrucci L, Loos RJ, Barroso I, Wareham NJ, Karpe F, Owen KR, Cardon LR, Walker M, Hitman GA, Palmer CN, Doney AS, Morris AD, Smith GD, Hattersley AT, McCarthy MI (2007): A common variant in the FTO gene is associated with body mass index and predisposes to childhood and adult obesity. *Science* 31: S. 889-894.

Fredriksson R, Hagglund M, Olszewski PK et al. The obesity gene, FTO, is of ancient origin, upregulated during food deprivation and expressed in neurons of feeding-related nuclei of the brain. *Endocrinology* 2008 ; 149 : 2062 – 2071

Froguel P und Boutin P. (2001): Genetics of pathways regulating body weight in the development of obesity in humans. *Exp Biol Med* 226(11), S. 991-996. 5

Fujisawa T, Ikegami H, Kawaguchi Y, Ogihara T (1998). Meta-analysis of the association of Trp64Arg polymorphism of b3-adrenergic receptor gene with body mass index. *J Clin Endocrinol Metab* 83: S. 2441-2444.

Fumeron F, Betoulle D, Aubert R, Herbeth B, Siest G, Rigaud D (2001): Association of a functional 5-HT transporter gene polymorphism with anorexia nervosa and food intake. *Mol Psychiatry* 6: S. 9-10

Galbete C, Toledo J, Martínez-González MA, Martínez JA, Guillén-Grima F, Marti A (2013): Lifestyle factors modify obesity risk linked to PPARG2 and FTO variants in an elderly population: a cross-sectional analysis in the SUN Project. *Genes & Nutrition* January 8(1), S. 61-67.

Garaulet M, Smith CE, Hernandez-Gonzalez T, Lee YC, Ordovas JM. PPARgamma Pro12Ala interacts with fat intake for obesity and weight loss in a behavioural treatment based on the Mediterranean diet. *Mol Nutr Food Res* 55(12): S. 1771–1779.



Garenc C, Perusse L, Chagnon YC, Rankinen T, Gagnon J, Borecki IB, Leon AS, Skinner JS, Wilmore JH, Rao DC, Bouchard C. Effects of b2-adrenergic receptor gene variants on adiposity: the HERITAGE Family Study. *Obes Res* 11: S. 612-618.

Gerken T, Girard CA, Tung YC et al. The obesity-associated FTO gene encodes a 2-oxoglutarate-dependent nucleic acid demethylase. *Science* 318: S. 1469-1472.

Gouda HN, Sagoo GS, Harding AH, Yates J, Sandhu MS, Higgins JP (2010): The association between the peroxisome proliferator-activated receptor-gamma2 (PPARG2) Pro12Ala gene variant and type 2 diabetes mellitus: a HuGE review and meta-analysis. *Am J Epidemiol* 171, S. 645-655.

Goyenechea E, Dolores, PM, Alfredo, MJ (2006): Weight regain after slimming induced by an energy-restricted diet depends on interleukin-6 and peroxisome-proliferator-activated-receptor-gamma2 gene polymorphisms. *Br J Nutr* 96, S. 965-972.

Grallert H, Huth C, Kolz M, Meisinger C, Herder C, Strassburger K, Giani G, Wichmann HE, Adamski J, Illig T, Rathmann W (2006): IL-6 promoter polymorphisms and quantitative traits related to the metabolic syndrome in KORA S4. *Exp Gerontol* 41: S. 737-745.

Green SA, Cole G, Jacinto M, Innis M, Liggett SB (1993): A polymorphism of the human beta2-adrenergic receptor within the fourth trans-membrane domain alters ligand binding and functional properties of the receptor. *J Biol Chem*. 268: S. 23116–23121.

Hamid YH, Rose CS, Urhammer SA, Glumer C, Nolsoe R, Kristiansen OP, Mandrup-Poulsen T, Borch-Johnsen K, Jorgensen T, Hansen T, Pedersen O (2005): Variations of the interleukin-6 promoter are associated with features of the metabolic syndrome in Caucasian Danes. *Diabetologia* 48: S. 251-260.

Hancock AM, Witonsky DB, Gordon AS, Eshel G, Pritchard JK, Coop G, Di Rienzo A. (2008): Adaptations to climate in candidate genes for common metabolic disorders. *PLoS Genet* 4(2):e32. 6

Haupt A, Thamer C, Machann J, Kirchhoff K, Stefan N, Tschritter O, Machicao F, Schick F, Häring HU, Fritsche A (2008): Impact of variation in the FTO gene on whole body fat distribution, ectopic fat, and weight loss. *Obesity (Silver Spring)* 16: S. 1969-1972.

Haupt A, Thamer C, Staiger H, Tschritter O, Kirchhoff K, Machicao F, Häring HU, Stefan N, Fritsche A. Variation in the FTO gene influences food intake but not energy expenditure. *Exp Clin Endocrinol Diabetes* 117, S. 194-197.



Herbeth B, Aubry E, Fumeron F, Aubert R, Cailotto F, Siest G, et al. Polymorphism of the 5-HT_{2A} receptor gene and food intakes in children and adolescents: The Stanislas Family Study. *Am J Clin Nutr* 82:S. 467-70.

Hinney A, Nguyen TT, Scherag A, Friedel S, Brönnner G, Müller TD, Grallert H, Illig T, Wichmann HE, Rief W, Schäfer H, Hebebrand J (2007): Genome Wide Association (GWA) Study for Early Onset Extreme Obesity Supports the Role of Fat Mass and Obesity Associated Gene (FTO) Variants. *PLoS ONE* 2(12):e1361.

Hosokai H, Tamura S, Koyama H, Satoh H (1993). Drinking habits influence the relationship between apolipoprotein AII and body mass index. *J Nutr Sci Vitaminol (Tokyo)* 39: S. 235-242.

Huguenin GV, Rosa G., The Ala allele in the PPAR-gamma2 gene is associated with reduced risk of type 2 diabetes mellitus in Caucasians and improved insulin sensitivity in overweight subjects. *Br J Nutr* 104, S. 488-497.

Julve J, Escolà-Gil JC, Rotllan N, Fiévet C, Vallez E, de la Torre C, Ribas V, Sloan JH, Blanco-Vaca F (2010): Human apolipoprotein A-II determines plasma triglycerides by regulating lipoprotein lipase activity and high-density lipoprotein proteome. *Arterioscler Thromb Vasc Biol* 30: S. 232-238.

Kadowaki H, Yasuda K, Iwamoto K, Otabe S, Shimokawa K, Silver K, Walston J, Yoshinaga H, Kosaka K, Yamada N, Saito Y, Hagura R, Akanuma Y, Shuldiner A, Yazaki Y, Kadowaki T (1995): A mutation in the 3-adrenergic receptor gene is associated with obesity and hyperinsulinemia in Japanese subjects. *Biochem Biophys Res Commun* 215: S. 555-560.

Kahara T, Hayakawa T, Nagai Y, Shimizu A, Takamura T (2004): Gln27Glu polymorphism of the beta2 adrenergic receptor gene in healthy Japanese men is associated with the change of fructosamine level caused by exercise. *Diabetes Res Clin Pract* 64(3): S. 207-212.

Kahara T, Takamura T, Hayakawa T, Nagai Y, Yamaguchi H, Katsuki T, Katsuki K, Katsuki M, Kobayashi K (2003): PPARgamma gene polymorphism is associated with exercise-mediated changes of insulin resistance in healthy men. *Metabolism* 52(2): S. 209-212.

Kalopissis AD, Pastier D, Chambaz J (2003): Apolipoprotein A-II: beyond genetic associations with lipid disorders and insulin resistance. *Curr Opin Lipidol* 14: S. 165-172.

Kato N, Sugiyama T, Morita H, Kurihara H, Sato T, Yamori Y, Yazaki Y. Association analysis of 2-adrenergic receptor polymorphisms with hypertension in Japanese. *Hypertension* 37(2): S. 286-292.



Katzmarzyk P, Perusse L, Bouchard C (1999): Genetics of abdominal visceral fat levels. *Am J Hum Biol* 11(2): S. 225-235. 7

Kim-Motoyama H, Yasuda K, Yamaguchi T, Yamada N, Katakura T, Shuldiner AR, Akanuma Y, Ohashi Y, Yazaki Y, Kadowaki T (1997): A mutation of the beta 3-adrenergic receptor is associated with visceral obesity but decreased serum triglyceride. *Diabetologia* 40(4):469-72.

Kissebah AH, Krakower GR (1994): Regional adiposity and morbidity. *Physiol Rev* 74(4): S. 761-811.

Klipstein-Grobusch K, Mohlig M, Spranger J, Hoffmann K, Rodrigues FU, Sharma AM, Klaus S, Pfeiffer AF, Boeing H (2006): Interleukin-6 g.-174GC promoter polymorphism is associated with obesity in the EPIC-Potsdam Study. *Obesity (Silver Spring)* 14(1): S. 14-18.

Krey G, Braissant O, L'Horset F, Kalkhoven E, Perroud M, Parker MG, Wahli W (1997): Fatty acids, eicosanoids, and hypolipidemic agents identified as ligands of peroxisome proliferator-activated receptors by coactivator-dependent receptor ligand assay. *Mol Endocrinol* 11(6): S. 779-791.

Krief S, Lönnqvist F, Raimbault S, Baude B, Van Spronsen A, Arner P, Strosberg AD, Ricquier D, Emorine LJ (1993): Tissue distribution of beta 3-adrenergic receptor mRNA in man. *J Clin Invest* 91(1): S. 344-349.

Kurabayashi T, Carey DG, Morrison NA (1996): The beta 3-adrenergic receptor gene Trp64Arg mutation is overrepresented in obese women: Effects on weight, BMI, abdominal fat, blood pressure, and reproductive history in an elderly Australian population. *Diabetes* 1996;45: 1358-1363.

Lambe KG, Tugwood JD. A human peroxisome-proliferator-activated receptor-gamma is activated by inducers of adipogenesis, including thiazolidinedione drugs. *Eur J Biochem* 1996;239:1-7.

Langberg H, Olesen JL, Gemmer C and Kjaer M. Substantial elevation of interleukin-6 concentration in peritendinous tissue, in contrast to muscle, following prolonged exercise in humans. *J Physiol* 542: 985-990, 2002.

Lange LA, Norris JM, Langefeld CD, Nicklas BJ, Wagenknecht LE, Saad MF, Bowden DW.; Association of adipose tissue deposition and beta-2 adrenergic receptor variants: the IRAS family study.; *Int J Obes (Lond)*. 2005 May;29(5):449-57.

Lappalainen TJ, Tolppanen AM, Kolehmainen M et al. The common variant in the FTO gene did not modify the effect of lifestyle changes on body weight: the Finnish Diabetes Prevention Study. *Obesity (Silver Spring)* 2009;17:832-836



Lara-Castro C, Hunter GR, Lovejoy JC, Gower BA, Fernandez JR (2005) Association of the intestinal fatty acid-binding protein Ala54Thr poly-morphism and abdominal adipose tissue in African-American and Caucasian women. *J Clin Endocrinol Metab* 90: 1196–1201.

Lara-Castro C, Hunter GR, Lovejoy JC, Gower BA, Fernandez JR. Apolipoprotein A-II polymorphism and visceral adiposity in African-American and white women. *Obes Res* 2005;13: 507–12.

Lefevre M, Lovejoy JC, Smith SR, Delany JP, Champagne C, Most MM, Denkins Y, de Jonge L, Rood J, Bray GA.; Comparison of the acute response to meals enriched with cis- or trans-fatty acids on glucose and lipids in overweight individuals with differing FABP2 genotypes.; *Metabolism*. 2005 Dec;54(12):1652-8.

Levy E, Ménard D, Delvin E, Stan S, Mitchell G, Lambert M, Ziv E, Feoli-Fonseca JC, Seidman E.; The polymorphism at codon 54 of the FABP2 gene increases fat absorption in human intestinal explants. *J Biol Chem*. 2001 Oct 26;276(43): 39679 - 84.

Lindi VI, Uusitupa MI, Lindström J, Louheranta A, Eriksson JG, Valle TT, Hämäläinen H, Ilanne-Parikka P, Keinänen-Kiukaanniemi S, Laakso M, Tuomilehto J; Finnish Diabetes Prevention Study.; Association of the Pro12Ala polymorphism in the PPAR-gamma2 gene with 3-year incidence of type 2 diabetes and body weight change in the Finnish Diabetes Prevention Study.; *Diabetes*. 2002 Aug;51(8):2581-6.

Lindi, V.I., Uusitupa, M.I., Lindstrom, J., Louheranta, A., Eriksson, J.G., Valle, T.T., Hamalainen, H., Ilanne-Parikka, P., Keinanen-Kiukaanniemi, S., Laakso, M. et al. (2002) Association of the Pro12Ala polymorphism in the PPAR-c2 gene with 3-year incidence of type 2 diabetes and body weight change in the Finnish Diabetes Prevention Study. *Diabetes*, 51, 2581–2586

Lofontan M, Berlan M. Fat cell adrenergic receptors and the control of white and brown fat cell function. *J Lipid Res* 1993;34: 1057–1091.

Lonnqvist F, Thorne A, Nilsson K, Hofstetter J, Arner P: Pathogenic role of visceral fat p3-adrenoceptors in obesity. *J Clin Invest* 95:1109-1116, 1995

Luan J, Browne PO, Harding AH, et al. Evidence for gene-nutrient interaction at the PPAR-gamma locus. *Diabetes* 2001;50:686–689. [PubMed: 11246892]

Macho-Azcarate, T., Marti, A., Gonza'lez, A., Martinez, J. A. & Ibanez, J. (2002) Gln27Glu polymorphism in the beta2-adrenergic receptor gene and lipid metabolism during exercise in obese women. *Int. J. Obes*. 26: 1434–1441.



Malik G, Ward MD, Gupta SK, Trosset MW, Grizzle WE, Adam BL, et al. Serum levels of an isoform of apolipoprotein A-II as a potential marker for prostate cancer. Clin Cancer Res 2005;11: 1073–85.

Marín C, Pérez-Jiménez F, Gómez P, Delgado J, Paniagua JA, Lozano A, Cortés B, Jiménez-Gómez Y, Gómez MJ, López-Miranda J.; The Ala54Thr polymorphism of the fatty acid-binding protein 2 gene is associated with a change in insulin sensitivity after a change in the type of dietary fat.; Am J Clin Nutr. 2005 Jul;82(1):196-200.

Marina Cardellini; C-174G Polymorphism in the Promoter of the Interleukin-6 Gene Is Associated With Insulin Resistance; Diabetes Care. 2005 Aug;28(8):2007-12. 9

Marti A, Corbalán MS, Martínez-Gonzalez MA, Martinez JA.; TRP64ARG polymorphism of the beta 3-adrenergic receptor gene and obesity risk: effect modification by a sedentary lifestyle.; Diabetes Obes Metab. 2002 Nov;4(6):428-30.

Martínez JA, Corbalán MS, Sánchez-Villegas A, Forga L, Marti A, Martínez-González MA.; Obesity risk is associated with carbohydrate intake in women carrying the Gln27Glu beta2-adrenoceptor polymorphism.; J Nutr. 2003 Aug;133(8):2549-54.

Martinez,J.A. et al. Genotype-dependent response to energy-restricted diets in obese subjects: towards personalized nutrition. Asia Pac. J. Clin. Nutr. 17, 119-122 (2008).

Masud S, Ye S. Effect of the peroxisome proliferator activated receptor-gamma gene Pro12Ala variant on body mass index: a meta-analysis. J Med Genet 2003;40:773–780. [PubMed: 14569127]

Masugi J, Tamori Y, Mori H, et al. Inhibitory effect of a proline-to-alanine substitution at codon 12 of peroxisome proliferator–activated receptor-gamma 2 on thiazolidinedione-induced adipogenesis. Bio-chem Biophys Res Commun 2000;268:178-82

Masuo K, Katsuya T, Fu Y, Rakugi H, Ogihara T, Tuck ML.; Beta2- and beta3-adrenergic receptor polymorphisms are related to the onset of weight gain and blood pressure elevation over 5 years.; Circulation. 2005 Jun 28;111(25):3429-34

Masuo K, Katsuya T, Kawaguchi H, Fu Y, Rakugi H, Ogihara T, Tuck ML.; Beta2-adrenoceptor polymorphisms relate to obesity through blunted leptin-mediated sympathetic activation.; Am J Hypertens. 2006 Oct;19(10):1084-91.

McKean-Cowdin R, Li X, Bernstein L, McTiernan A, Ballard-Barbash R, Gauderman WJ, Gilliland F.; The ADRB3 Trp64Arg variant and obesity in African-American breast cancer cases.; Int J Obes (Lond). 2007 Jul;31(7):1110-8.



Medina, G., Sewter, C., & Vidal-Puig, A. J. (2000). Revisi3n: PPAR γ tiazolidinedionas, algo m1s que un tratamiento contra la diabetes. *Medicina Cl1nica*, 115, 392–397.

Meirhaeghe A, Helbecque N, Cottel D, Amouyel P. Beta2-adrenoceptor gene polymorphism, body weight, and physicalactivity. *Lancet* 1999;353: 896.

Meirhaeghe, A., Luan, J., Selberg-Franks, P., Hennings, S., Mitchell, J., & Halsall, D. (2001). The effect of the Gly16Arg polymorphism of the beta(2)-adrenergic receptor gene on plasma free fatty acid levels modulated by physical activity. *Journal of Clinical Endocrinology and Metabolism*, 86(12), 5881–5887

Memisoglu A, Hu FB, Hankinson SE, Manson JE, De Vivo I, Willett WC, Hunter DJ.; Interaction between a peroxisome proliferator-activated receptor gamma gene polymorphism and dietary fat intake in relation to body mass.; *Hum Mol Genet.* 2003 Nov 15;12(22):2923-9

Mitchell BD, Blangero J, Comuzzie AG, Almasy LA, Shuldiner AR, Silver Ket al.A paired sibling analysis of the beta-3 adrenergic receptor and obesity in Mexican Americans. *J Clin Invest* 1998; 101: 584–587. 10

Mitchell BD, Kammerer CM, O’Connell P, et al.Evidence for linkage of postchallenge insulin levels with intestinal fatty acid-binding protein (FABP-2) in Mexican Americans. *Dia-betes.* 1995;44:1046–53

Mitchell, J.A. et al. FTO genotype and the weight loss benefits of moderate intensity exercise. *Obesity.* (Silver. Spring) 18, 641-643 (2010).

Moffett SP, Zmuda JM, Cauley JA, Stone KL, Nevitt MC, Ensrud KE, Hillier TA, Hochberg MC, Joslyn G, Morin P, Cummings SR; SOF Research Group (2004): Association of the G-174C variant in the interleukin-6 promoter region with bone loss and fracture risk in older women, *J Bone Miner Res* 19, S. 1612-1618.

Mohamed-Ali V, Goodrick S, Rawesh A, Katz DR, Miles JM, Yudkin JS, Klein S, Coppel SW 1997 Subcutaneous adipose tissue releases interleukin-6, but not tumor necrosis factor-, in vivo. *J Clin Endocrinol Metab* 82:4196–4200

Moore GE, Shuldiner AR, Zmuda JM, Ferrell RE, McCole SD, Hagberg JM. Obesity gene variant and elite endurance performance. *Metabolism* 2001;50: 1391

Mori Y, Kim-Motoyama H, Ito Y, Katakura T, Yasuda K, Ishiyama-Shigemoto S, Yamada K, Yasuo A, Ohashi Y, Kimura S, Yazaki Y, Kadowaki T. The Gln27Glu2-adrenergic receptor variant is associated with obesity due to subcutaneous fat accumulation in Japanese men. *Biochem Biophys Res Commun* 1999; 258: 138–140.



Motoomi Nakamura, Misuzu Tanaka, Shimako Abe, PhD, Kazue Itoh, PhD, Katsumi Imai, PhD, Takashi Masuda, BS, Hitomi Nakao, BS; Association between beta 3-adrenergic receptor polymorphism and a lower reduction in the ratio of visceral fat to subcutaneous fat area during weight loss in Japanese obese women; Nutrition Research, Volume 20, Issue 1, January 2000, Pages 25–34.

Mousavinasab F, Tahtinen T, Jokelainen J, Koskela P, Vanhala M, Oikarinen J, et al. Effect of the Pro12Ala polymorphism of the PPAR γ 2 gene on serum adiponectin changes. Endocrine 2005;27: 307-9

Nakamura M, Tanaka M, Kinukawa N, Abe S, Itoh K, Imai K, Masuda T, Nakao H: Association between beta-3 adrenergic receptor polymorphism and a lower reduction in the ratio of visceral fat to subcutaneous fat area during weight loss in Japanese obese women. Nutr Res 2000;20:25–34

Nicklas BJ, van Rossum EF, Berman DM, Ryan AS, Dennis KE, Shuldiner AR. Genetic variation in the peroxisome proliferator-activated receptor-gamma2 gene (Pro12Ala) affects metabolic responses to weight loss and subsequent weight regain. Diabetes 2001; 50: 886-890.

Ohashi J, Naka I, Kimura R et al. FTO polymorphisms in oceanic populations . J Hum Genet 2007 ; 52 : 1031 – 1035

Oizumi T, Daimon M, Saitoh T, Kameda W, Yamaguchi H, Ohnuma H, Igarashi M, Eguchi H, Manaka H, Tominaga M, Kato T. Genotype Arg/Arg, but not Trp/Arg, of the Trp64Arg polymorphism of the 3-adrenergic receptor is associated with type 2 diabetes and obesity in a large Japanese sample. Diabetes Care. 2001;24:1579–1583. 11

Oizumi T, Daimon M, Saitoh T, Kameda W, Yamaguchi H, Ohnuma H et al. Genotype Arg/Arg, but not Trp/Arg, of the Trp64Arg polymorphism of the beta(3)-adrenergic receptor is associated with type 2 diabetes and obesity in a large Japanese sample. Diabetes Care 2001;24: 1579–1583.

Ostrowski K, Hermann C, Bangash A, Schjerling P, Nielsen JN and Pedersen BK. A trauma-like elevation of plasma cytokines in humans in response to treadmill running. J Physiol 513 (Pt 3): 889-894, 1998

Pacanowski MA, Zineh I, Li H, et al. Adrenergic gene polymorphisms and cardiovascular risk in the NHLBI-sponsored Women's Ischemia Syndrome Evaluation. J Transl Med 2008;6:11

Patricia C. Underwood et. al., Replication and meta-analysis of the gene-environment interaction between body mass index and the interleukin-6 promoter polymorphism with higher insulin resistance; Volume 61, Issue 5, May 2012, Pages 667–671



Peeters A, Beckers S, Verrijken A et al. Variants in the FTO gene are associated with common obesity in the Belgian population . Mol Genet Metab 2007 ; 81 : 421 – 429

Pereira AC, Floriano MS, Mota GF, Cunha RS, Herkenhoff FL, Mill JG, Krieger JE. Adrenoceptor functional gene variants, obesity, and blood pressure level interactions in the general population. Hypertension. 2003;42(pt 2):685–692

Perusse L, Chagnon YC, Weisnagel SJ, et al. The human obesity gene map: the 2000 update. Obes Res. 2001;9:135–69.

Phares DA, Halverstadt AA, Shuldiner AR, Ferrell RE, Douglass LW, Ryan AS, Goldberg AP, Hagberg JM.; Association between body fat response to exercise training and multilocus ADR genotypes.; Obes Res. 2004 May;12(5):807-15.

Pratley RE, Baier L, Pan DA, Salbe AD, Storlien L, Ravussin E, Bogardus C.; Effects of an Ala54Thr polymorphism in the intestinal fatty acid-binding protein on responses to dietary fat in humans.; J Lipid Res. 2000 Dec;41(12):2002-8.

Qi L, Zhang C, van Dam RM, Hu FB.; Interleukin-6 genetic variability and adiposity: associations in two prospective cohorts and systematic review in 26,944 individuals.; J Clin Endocrinol Metab. 2007 Sep;92(9):3618-25.

Rankinen,T., Rice,T., Teran-Garcia,M., Rao,D.C., & Bouchard,C. FTO genotype is associated with exercise training-induced changes in body composition. Obesity. (Silver. Spring) 18, 322-326 (2010).

Razquin C, Alfredo Martinez J, Martinez-Gonzalez MA, Corella D, Santos JM, Marti A. The Mediterranean diet protects against waist circumference enlargement in 12Ala carriers for the PPARgamma gene: 2 years' follow-up of 774 subjects at high cardiovascular risk. Br J Nutr. 2009;102(5):672–9

Rexrode KM, Pradhan A, Manson JE, Buring JE, Ridker PM 2003 Relationship of total and abdominal adiposity with CRP and IL-6 in women. Ann Epidemiol 13:674–682

Robitaille J, Després JP, Pérusse L, Vohl MC.; The PPAR-gamma P12A polymorphism modulates the relationship between dietary fat intake and components of the metabolic syndrome: results from the Québec Family Study.; Clin Genet. 2003 Feb;63(2):109-16.

Rosado,E.L., Bressan,J., Hernandez,J.A., Martins,M.F., & Cecon,P.R. [Effect of diet and PPARgamma2 and beta2-adrenergic receptor genes on energy metabolism and body composition in obese women]. Nutr. Hosp. 21, 317-331 (2006)

Rosado,E.L., Bressan,J., Martins,M.F., Cecon,P.R., & Martinez,J.A. Polymorphism in the PPARgamma2 and beta2-adrenergic genes and diet lipid effects on body composition, energy expenditure and eating behavior of obese women. Appetite 49, 635-643 (2007).



Rosendal L, Sogaard K, Kjaer M, Sjogaard G, Langberg H and Kristiansen J. Increase in interstitial interleukin-6 of human skeletal muscle with repetitive low-force exercise. *J Appl Physiol* 98: 477-481, 2005.

Sakane N, Yoshida T, Umekawa T, Kondo M, Sakai Y, Takahashi T. I33-adrenergic-receptor polymorphism: a genetic marker for visceral fat obesity and insulin resistant syndrome. *Diabetologia* 1997; 40: 200-204.

Sakane N, Yoshida T, Umekawa T, Kogure A, Takakura Y, Kondo M.; Effects of Trp64Arg mutation in the beta 3-adrenergic receptor gene on weight loss, body fat distribution, glycemic control, and insulin resistance in obese type 2 diabetic patients.; *Diabetes Care*. 1997 Dec;20(12):1887-90.

Sanghera,D.K. et al. PPARG and ADIPOQ gene polymorphisms increase type 2 diabetes mellitus risk in Asian Indian Sikhs: Pro12Ala still remains as the strongest predictor. *Metabolism* 59, 492-501 (2010).

Santiago et. al.; Trp64Arg polymorphism in ADRB3 gene is associated with elite endurance performance; *Br J Sports Med* 2011;45:147-149

Santiago,C. et al. Trp64Arg polymorphism in ADRB3 gene is associated with elite endurance performance. *Br. J. Sports Med*. 45, 147-149 (2011).

Schiffelers SL, Saris WH, Boomsma F, van Baak MA. beta(1)- and beta(2)-Adrenoceptor-mediated thermogenesis and lipid utilization in obese and lean men. *J Clin Endocrinol Metab* 2001;86: 2191–2199.

Shiwaku K, Nogi A, Anuurad E, Kitajima K, Enkhmaa B, Shimono K, Yamane Y.; Difficulty in losing weight by behavioral intervention for women with Trp64Arg polymorphism of the beta3-adrenergic receptor gene.; *Int J Obes Relat Metab Disord*. 2003 Sep;27(9):1028-36.

SipilainenR,UusitupaM,HeikkinenS, RissanenA,LaaksoM:Polymorphismof the(33-adrenergicreceptorgeneaffects basalmetabolicrateinobeseFinns.*Dia-betes*46:77-80,1997

Smith CE, Ordovás JM, Sánchez-Moreno C, Lee Y-C, Garaulet M (2012): Apolipoprotein A-II polymorphism: relationships to behavioural and hormonal mediators of obesity; *Int J Obes* 36(1): S. 130–136. 13

Speakman JR, Rance KA, Johnstone AM. Polymorphisms of the FTO gene are associated with variation in energy intake, but not energy expenditure . *Obesity (Silver Spring)* 2008 ; 16 : 1961 – 1965.



Spiegelman, B., Castillo, G., Hauser, S., & Puigserver, P. (1999). Regulation of energy balance by PPAR γ and its coactivators. In Guy-Grand, B., & Ailhaud, G. (Eds.). *Progress in obesity research*. 8 (chapter 5), 39-46. 8th International Congress on Obesity.

Stephens J.W., Hurel S.J., Cooper J.A., Acharya J., Miller G.J., Humphries S.E., A common functional variant in the interleukin-6 gene is associated with increased body mass index in subjects with type 2 diabetes mellitus, *Mol. Genet. Metab.*, 2004, 82, 180-186.

Strazzullo P, Iacone R, Siani A, Cappuccio FP, Russo O, Barba G, Barbato A, D'Elia L, Trevisan M, Farinara E. Relationship of the Trp64Arg polymorphism of the beta3-adrenoceptor gene to central adiposity and high blood pressure: interaction with age: cross-sectional and longitudinal findings of the Olivetti Prospective Heart Study. *J Hypertens*. 2001;19:399-406.

Strosberg AD: Structure, function, and regulation of the three beta-adrenergic receptors. *Obes Res* 1995;3(suppl 4):501-505.

Stryjecki C, Mutch DM (2001): Fatty acid-gene interactions, adipokines and obesity. *European Journal of Clinical Nutrition* 65, S. 285-297.

Su AI, Wiltshire T, Batalov S et al. A gene atlas of the mouse and human protein-encoding transcriptomes. *Proc Natl Acad Sci USA* 2004 ; 20 101 : 6062 - 6067.

Takakura Y, Yoshioka K, Umekawa T, Kogure A, Toda H, Yoshikawa T, Yoshida T.; Thr54 allele of the FABP2 gene affects resting metabolic rate and visceral obesity.; *Diabetes Res Clin Pract*. 2005 Jan;67(1):36-42.

Tamori Y, Masugi J, Nishino N, et al. Role of peroxisome proliferator-activated receptor-gamma in maintenance of the characteristics of mature 3T3-L1 adipocytes. *Diabetes* 2002;51:2045-55.

Tataranni, P. A., L. J. Baier, G. Paolisso, B. V. Howard, and E. Ravussin. 1996. Role of lipids in development of non-insulin dependent diabetes mellitus: lessons learned from the Pima Indians. *Lipids*. 31(Suppl.): S267-S270.

Tchernof A, Starling RD, Turner A, Shuldiner AR, Walston JD, Silver K, Poehlman ET. Impaired capacity to lose visceral adipose tissue during weight reduction in obese postmenopausal women with the Trp64Arg beta3-adrenoceptor gene variant. *Diabetes* 2000; 49: 1709-1713.

Thamer, C., Haap, M., Volk, A., Maerker, E. et al., Evidence for greater oxidative substrate flexibility in male carriers of the Pro 12 Ala polymorphism in PPARgamma2. *Horm. Metab. Res.* 2002, 34, 132-136.



Timmermann B, Mo R, Luft FC, Gerds E, Busjahn A, Omvik P, Li GH, Schuster H, Wienker TF, Hoehe MR, Lund-Johansen P. Beta2-adrenoceptor genetic variation is associated with genetic predisposition to essential hypertension: the Bergen Blood Pressure Study. *Kidney Int.* 1998;53:1455–1460. 14

Timpson NJ, Emmett PM, Frayling TM et al. The fat mass- and obesity-associated locus and dietary intake in children. *Am J Clin Nutr* 2008;88:971–978.

Tontonoz P, Hu E, Spiegelman BM: Stimulation of adipogenesis in fibroblasts by PPAR2, a lipid-activated transcription factor. *Cell* 79:1147-1156, 1994.

Tschritter O, Preissl H, Hennige AM et al. The cerebrocortical response to hyperinsulinemia is reduced in overweight humans: a magnetoencephalographic study. *Proc Natl Acad Sci USA* 2006 ; 103 : 12103 – 12108

Tschritter O, Preissl H, Yokoyama Y et al. Variation in the FTO gene locus is associated with cerebrocortical insulin resistance in humans. *Diabetologia* 2007 ; 50 : 2602 – 2603.

Ukkola O, Rankinen T, Rice T, Gagnon J, Leon AS, Skinner JS, Wilmore JH, Rao DC, Bouchard C; HERITAGE Family Study.; Interactions among the beta2- and beta3-adrenergic receptor genes and total body fat and abdominal fat level in the HERITAGE Family Study.; *Int J Obes Relat Metab Disord.* 2003 Mar;27(3):389-93.

Ukkola O, Rankinen T, Weisnagel SJ, Sun G, Perusse L, Chagnon YC, Despres JP, Bouchard C. Interactions among thea2-,b2-, and b3-adrenergic receptor genes and obesity-related phenotypes in the Quebec Family Study.*Metabolism* 2000;49: 1063–1070.

Ukkola O, Tremblay A, Bouchard C.; Beta-2 adrenergic receptor variants are associated with subcutaneous fat accumulation in response to long-term overfeeding.; *Int J Obes Relat Metab Disord.* 2001 Nov;25(11):1604-8.

Umekawa T, Yoshida T, Sakane N, Kogure A, Kondo M, Honjyo H. Trp64Arg mutation of b3-adrenoceptor gene deteriorates lipolysis induced by b3-adrenoceptor agonist in human omental adipo-cytes.*Diabetes*1999;48: 117–120.

Umekawa T, Yoshida T, Sakane N, Kogure A, Kondo M, Honjyo H.; Trp64Arg mutation of beta3-adrenoceptor gene deteriorates lipolysis induced by beta3-adrenoceptor agonist in human omental adipocytes.; *Diabetes.* 1999 Jan;48(1):117-20.

Valve, R., Sivenius, K., Miettinen, R., Pihlajamaäki, J., Rissanen, A., Deeb, S. S., et al. (1999). Two polymorphisms in the peroxisome proliferator-activated receptor-gene are associated with severe overweight. *Journal of Clinical Endocrinology and Metabolism*, 84(10),3708–3712.



van Rossum, C. T., Hoebee, B., Seidell, J. C., Bouchard, C., van Baak, M. A., & de Groot, C. P. (2002). Genetic factors as predictors of weight gain in young adult Dutch men and women. *International Journal of Obesity*, 26(4), 517–528.

Vimaleswaran KS, Radha V, Mohan V.; Thr54 allele carriers of the Ala54Thr variant of FABP2 gene have associations with metabolic syndrome and hypertriglyceridemia in urban South Indians.; *Metabolism*. 2006 Sep;55(9):1222-6.

Vimaleswaran, K. S., Radha, V., Ghosh, S., Majumder, P. P. et al., A haplotype at the UCP1 gene locus contributes to genetic risk for type 2 diabetes in Asian Indians (CURES-72). *Metab. Syndr. Relat. Disord.* 2010,8, 63–68. 15

Voarava B, Weyer C, Hanson K, Tataranni PA, Bogardus C, Pratley RE (2001). Circulating interleukin-6 in relation to adiposity, insulin action, and insulin secretion. *Obes Res* 9, 414–417.

Wahlen K, Sjolin E, Hoffstedt J. The common rs9939609 gene variant of the fat mass- and obesity-associated gene FTO is related to fat cell lipolysis. *J Lipid Res* 2008;49:607–611.

Walston J, Silver K, Bogardus C, et al: Time of onset of non-insulin-dependent diabetes mellitus and genetic variation in the beta 3-adrenergic-receptor gene. *N Engl J Med* 1995;333:343–347.

Wang, F., Han, X. Y., Ren, Q., Zhang, X. Y. et al., Effect of genetic variants in KCNJ11, ABCC8, PPARG and HNF4A loci on the susceptibility of type 2 diabetes in Chinese Han population. *Chin. Med. J. (Engl.)* 2009,122, 2477–2482.

Wardle J, Carnell S, Haworth CM et al. Obesity-associated genetic variation in FTO is associated with diminished satiety . *J Clin Endocrinol Metab* 2008 ; 93 : 3640 – 3643.

Weiss EP, Kulaputana O, Ghiu IA, Brandauer J, Wohn CR, Phares DA, Shuldiner AR, Hagberg JM.; Endurance training-induced changes in the insulin response to oral glucose are associated with the peroxisome proliferator-activated receptor-gamma2 Pro12Ala genotype in men but not in women.; *Metabolism*. 2005 Jan;54(1):97-102.

Weiss, E.P. et al. FABP2 Ala54Thr genotype is associated with gluco-regulatory function and lipid oxidation after a high-fat meal in sedentary nondiabetic men and women. *Am. J. Clin. Nutr.* 85, 102-108 (2007).

Wernstedt I, Eriksson AL, Berndtsson A, Hoffstedt J, Skrtic S, Hedner T, Hulten LM, Wiklund O, Ohlsson C, Jansson JO 2004 A common polymorphism in the interleukin-6 gene promoter is associated with overweight. *Int J Obes Relat Metab Disord* 28:1272–1279



Widen E, Lehto M, Kanninen T, Walston J, Shuldiner AR, Groop LC. Association of a polymorphism in the beta 3-adrenergic-receptor gene with features of the insulin resistance syndrome in Finns. *N Engl J Med* 1995;333: 348–351.

Walston J, Silver K, Bogardus C. Time of onset of non-insulin- dependent diabetes mellitus and genetic variation in the beta3-adrenergic receptor gene. *N Engl J Med* 1995; 333: 343-347.

Xu, H.E., Lambert, M.H., Montana, V.G., Parks, D.J., Blanchard, S.G., Brown, P.J., Sternbach, D.D., Lehmann, J.M., Wisely, G.B., Willson, T.M. et al. (1999) Molecular recognition of fatty acids by peroxisome proliferator-activated receptors. *Mol. Cell*, 3, 397–403.

Yamada K, Ishiyama-Shigemoto S, Ichikawa F, Yuan X, Koyanagi A, Koyama W, Nonaka K. Polymorphism in the 5' leader cistron of the beta2-adrenergic receptor gene associated with obesity and type 2 diabetes. *J Clin Endocrinol Metab* 1999;84: 1754–1757.

Yildiz BO, Suchard MA, Wong ML, McCann SM, Licinio J: *Alterations in the dynamics of circulating ghrelin, adiponectin, and leptin in human obesity*. In: *Proc. Natl. Acad. Sci. U.S.A.*. 101, Nr. 28, Juli 2004, S. 10434–9. 16

Yoshida T, Sakane N: Association between beta3-adrenoreceptor polymorphism with obesity and diabetes in Japan. *Intern Med* 1999; 38:207–209.

Yoshida T, Sakane N, Umekawa T, Sakai Y, Takahashi T, Kondo M: Mutation of the beta3-adrenergic receptor gene and response to treatment of obesity. *Lancet* 346:1433-1434, 1995

Zaagsma J, Nahorski SR. Is the adipocyte beta-adrenoceptor a prototype for the recently cloned atypical beta3-adrenoceptor? *Trends Pharmacol Sci* 1990;11: 3–7.

Zhang J, Fu M, Cui T, et al. Selective disruption of PPARgamma2 impairs the development of adipose tissue and insulin sensitivity. *Proc Natl Acad Sci U S A* 2004;101:10703-8.

