**Table S1**. Phenotype of mono-allelic likely pathogenic variants of the leptin (*Lep*) and the leptin receptor gene (*Lepr*) in animal models.

**Table S1A**. Phenotype (weight status, body fat, leptin levels and metabolic parameters) of mono-allelic likely pathogenic variants of the leptin gene (*Lep wt/-*) in comparison to wildtype homozygosity (*Lep wt/wt*) phenotype in animal models.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Author, year** | **Animal model** | **Weight status** | **Fat mass** | **Circulating leptin concentrations** | **Metabolic abnormalities** | **Differences *Lep* wt/- vs wt/wt:** **Weight status (W), Leptin (L), Metabolic (M)** |
| Yen et al. 1968(52) | mouse; C57BL/6J *wt/wt* vs *Lep* wt/- vs *Lep* -/-, 3-5 months age | *Lep* wt/- had similar body weight to *wt/wt* | n.a. | n.a. | Similar blood glucose to *wt/wt*; *Lep* wt/- showed intermediate CO2 oxidation in fat tissue (between values of *wt/wt* and *-/-*) | W-, M- |
| Soll et al. 1975(18) | mouse; C57BL/6J *wt/wt* vs *Lep* wt/- vs *Lep* -/-, thin littermates of equal age | *Lep* wt/- had similar body weight to thin littermates and *wt/wt* | n.a. | n.a. | Similar plasma glucose, plasma insulin and insulin binding to receptors in *Le p*wt/- and WT | W-, M- |
| Coleman 1979(42) | mouse; male C57BL/6J and C57BL/KsJ *wt/wt* vs *Lep* wt/-, 7-9 months of age; chow diet, total fast | No differences between *Lep* wt/- and *wt/wt* in starting weight | n.a. | n.a. | No differences between *Lep* wt/- and *wt/wt* in plasma insulin, blood sugar or liver glycogen concentration; differences in survival time after total fast (*Le p*wt/- showed longer survival time) | W-, M- |
| Flatt and Bailey 1981(43) | mouse; C57BL/6J outcrossed to JH, CRL and conseq.to local strains (Aston stock) wt/wt, *Lep* wt/-, *Lep*-/-, males, at 20 weeks of age | No differences in body weight between *wt/wt* and *Lep* wt/- | n.a. | n.a. | Plasma glucose and insulin concentrations were higher in *Lep* wt/- than *wt/wt* mice (p<0.05) | W-, M+ |
| Sena et al. 1982(48) | mouse; C57BL/6J  *wt/wt*, *Lep* wt/-, *Lep*-/- at 5-7 months age | Brain weight about 35% lower in *Lep* wt/-and *Lep*+/+ than in  *wt/wt* (p<0.05); liver weight in *Lep* wt/- similar to liver weight in  *wt/wt* | Lower cholesterol and phospholipid weight in brain and liver *Lep* wt/- vs  *wt/wt* (p<0.05); ratio unsaturated/saturated FA lower in *Lep* wt/- than in  *wt/wt* in liver (p<0.05), higher than in  *wt/wt* in brain (p<0.05); higher fatty acid melting point of liver in *Lep*wt/-vs  *wt/wt*(p<0.05) | n.a. | n.a. |  |
| Chung et al. 1998(41) | mouse; C57BL/6J *Lep* wt/- and  *wt/wt*; sacrificed between 39 and 120 days after 2-h fast; observational study | no difference in BMI between *Lep* wt/- vs  *wt/wt* | 26.7% higher in *Lep* wt/- than in  *wt/wt* (p<0.05), BF% (adjusted for age and sex) 23.5% higher in *Lep* wt/-than in  *wt/wt* (p<0.05) | Mean levels comparable between *Lep* wt/- and  *wt/wt*; if adjusted for fat mass, 32.8% lower in *Lep* wt/- than in  *wt/wt* (p<0.05) | n.a. | W+, L- |
| Haller et al. 1999(44) | mouse; C57BL/6J  *wt/wt*, *Lep*wt/- , *Lep*-/- at comparable ages (62-364 days) | Female *Lep* wt/- were heavier than female  *wt/wt* (p<0.05); male *Lep* wt/- were not heavier than male  *wt/wt* (p>0.05) | n.a. | n.a. | Fasting blood glucose was higher in female *Lep*wt/- than in female  *wt/wt* (p<0.05); it was not different between male *Lep*wt/- and male  *wt/wt* (p>0,05) | W+, M+ |
| Tran et al. 2003(50) | mouse; C57BL/6J females;  *wt/wt*, *Lep* wt/-, *Lep* -/- (chow diet) | Slightly higher body weight at 8 weeks of in *Lep* wt/- than in  *wt/wt* animals (p<0.05) | n.a. | n.a. | No differences in insulin, glucose, and cholesterol between *Lep* wt/- and  *wt/wt*; TG levels higher in *Lep* wt/- than in  *wt/wt* (p<0.05) | W+, M+ |
| Swartz-Basile et al. 2006(49) | mouse; C57Bl/6J lean  *wt/wt* females, *Lep* wt/- and *Lep* -/- ; 12 weeks age (chow or lithogenic diet) | *Lep*wt/- had slightly higher body weight compared to  *wt/wt* in both diets (p<0.05) | n.a. | Leptin levels lower in *Lep* wt/- vs  *wt/wt* in both diets (p<0.05) | Lithogenic diet increased serum cholesterol, biliary cholesterol crystals, HDL and serum glucose levels in *Lep* wt/- vs  *wt/wt*; *Lep* wt/- had similar number of hepatic fat vacuoles as  *wt/wt*; | W+, L+, M+ |
| Begriche et al. 2008(40) | mouse; male C57BL/6J  *wt/wt* and C57BL6- *Lep* wt/-, 5-weeks old under SCD or HFD | increased initial body weight in *Lep* wt/- than in  *wt/wt* (p<0.05) | Initial body fat mass significantly increased in *Lep* wt/- compared to  *wt/wt* (p<0.05) | Initial plasma leptin levels similar in *Lep* wt/- and  *wt/wt*; relative leptin level (expressed per gram of fat mass) was lower in *Lep* wt/- compared to  *wt/wt* (p<0.05) | *Lep* wt/- under SCD: slight glucose intolerance, increased plasma levels of ALT vs  *wt/wt*; HFD: triglycerides, total cholesterol and GLP-1 significantly increased in *Lep* wt/- vs  *wt/wt* (p<0.05) | W+, L+, M+ |
| Huang et al. 2008(45) | mouse; C57BL/6J  *wt/wt*, *Lep* wt/- and *Lep*-/- at 2,3,4 and 7 weeks of age | No difference in body weight between *Lep* wt/- and  *wt/wt* | n.a. | n.a. | n.a. | W- |
| Trevaskis et al. 2008(51) | mouse; C57BL/6J:  *wt/wt* vs *Lep*wt/- vs. Dbl-Het vs Mc4rHet; group (1) LFD from weaning until 28 weeks of age; group (2) HFD 17-28 weeks of age | Body weight in *Lep* wt/- was not significantly different from  *wt/wt* in both diets | *Lep* wt/- had greater  FM compared with  *wt/wt* (p<0.05| only for females) | *Lep* wt/-: disproportionately lower serum leptin as a function of percent FM vs leptin in  *wt/wt* (p<0.05) | Fasting insulin levels in *Lep* wt/- were not significantly different from  *wt/wt* under LFD, fasting insulin levels were significantly different from *wt/wt* under HFD (only in male mice) | W-, L+, M+ |
| Chebel et al. 2008(53) | cow; SNP in the R4C locus in exon 2 of the leptin gene:  *wt/wt*, *Lep* wt/-, *Lep*-/-; examination of differences in milk composition | Slightly lower body weight in heterozygous cows (p<0.05) | n.a. | n.a. | n.a. | W- |
| Philbrick et al. 2015(47) | mouse; female C57BL/6  *wt/wt*, *Lep* wt/-, *Lep*-/- at 7 weeks age | *Lep* wt/- mice had greater body weight than  *wt/wt* (p<0.05) | *Lep* wt/- had greater abdominal WAT weight than  *wt/wt* (p<0.05) | Lower leptin levels in *Lep* wt/- mice than in  *wt/wt* (p<0.05) | n.a. | W+, L+ |
| Lee et al. 2018(46) | mouse; BTBR  *wt/wt*, *Lep* wt/-, *Lep* -/- mice at 6,10, 15 and 20 weeks age | Similar weight in *Lep* wt/- and  *wt/wt* | n.a. | n.a. | Similar blood glucose levels in *Lep* wt/- and  *wt/wt* | W-, M- |

Abbreviations: ALT: alanine aminotransferase; FA: fatty acids; FM: fat mass; HFD: high fat diet; LFD: low fat diet; n.a.: not available; SCD: standard calory diet; SNP: single nucleotide polymorphismus; TG: triglycerides; WAT: white adipose tissue, /: not available. Differences *Lep wt/-* vs wt/wt: weight status and body fat, L: leptin levels, M: metabolic abnormalities. -: no differences observed; +: differences observed.

**Table S1B**. Phenotype (weight status, body fat, leptin levels and metabolic parameters) of mono-allelic likely pathogenic variants of the leptin receptor gene (*Lepr wt/-*) in comparison to wildtype homozygosity (*Lepr wt/wt*) phenotype in animal models.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Author, year** | **animal model** | **Weight status** | **Fat mass** | **Circulating leptin concentrations** | **Metabolic abnormalities** | **Differences *Lepr wt/-* vs wt/wt:****Weight status (W), Leptin (L), Metabolic (M)** |
| Coleman 1979(42) | mouse; C57BL/6J and C57BLKS/J wt/wt, *Lepr wt/-*, 7-9 months of age | no differences between wt/wt and *Lepr wt/-* in starting body weight | n.a. | n.a. | No differences between wt/wt and *Lepr wt/-* in plasma insulin, blood sugar or liver glycogen concentration | W-, M- |
| York et al. 1984(77) | Zucker rat; wt/wt vs *Lepr wt/-* vs *Lepr -/-* at 8-10 week age | wt/wt and *Lepr wt/-* were both lean | wt/wt and *Lepr wt/-* showed similar wet weight of brown adipose tissue | n.a. | Significant gene-dosage effect shown for free fatty acids, triiodothyronine; serum insulin levels similar in *Lepr wt/-*vs wt/wt (p<0.05);  gene-dosage effect for GDP binding to interscapular brown adipose tissue mitochondria and for oxygen consumption after a meal or norepinephrine injection | W-, M+ |
| Blonz et al. 1985(66) | Zucker rat; wt/wt vs *Lepr wt/-* and *Lepr -/-* at 2 and 4 weeks age | Significantly higher in *Lepr wt/-* vs wt/wt; carcass protein and fat-free weight significantly higher in *Lepr wt/-*vs wt/wt (p<0.05) | Carcass fat and BF% significantly higher in *Lepr wt/-* vs wt/wt (p<0.05) | n.a. | Plasma glucose and insulin not significantly different from wt/wt; higher insulin release by pancreata undergoing glucose perfusion in *Lepr wt/-*(p<0.05) | W+, M- |
| Truett et al. 1995(102) | rat; cross between Crl (ZUC) BR and BN/Crl rats; BNZ progeny. wt/wt vs *Lepr wt/-* and *Lepr -/-* at 7 or 14 days of age | 7-day old and 14-day old *Lepr wt/-* rats showed higher body weight than wt/wt (p<0.05) | 7-day-old *Lepr wt/-* showed higher weight of inguinal adipose pads than wt/wt, but not at 14 days of age (p<0.05) | n.a. | n.a. | W+ |
| Phillips and Cleary 1994(74) | Zucker rat; wt/wt vs *Lepr wt/-* and *Lepr -/-* at 17 days of age | *Lepr wt/-* rats had lower body weight than wt/wt (p<0.05) | *Lepr wt/-* rats hat higher inguinal pad weight than wt/wt; *Lepr wt/-* rats had higher fat pad-to-body weight than wt/wt (p<0.05) | n.a. | *Lepr wt/-* rats had lower serum glucose, higher cholesterol and triacylglycerol than wt/wt (p<0.05) | W+, M+ |
| Zhang et al. 1997(78) | rat; 13M x Brown Norway Hybrids. wt/wt, *Lepr wt/-* , *Lepr -/-* at 10 days age | slightly higher in *Lepr wt/-*vs wt/wt (p<0.05) | FM and BF % significantly higher in *Lepr wt/-*vs wt/wt (p<0.05) | At comparable fat mass leptin concentration was significantly higher in *Lepr wt/-* vs wt/wt (p<0.05) | No differences in insulin concentrations between *Lepr wt/-* and wt/wt | W+, L+, M- |
| Schwarzer et al. 1997(75) | rat; 13M x Brown Norway Hybrids.wt/wt vs *Lepr wt/-* vs *Lepr -/-* at 7 and 16 days of age | wt/wt and *Lepr wt/-* were both lean | At both ages *Lepr wt/-* had significantly more BF than wt/wt (p<0.05) | n.a. | No differences in plasma insulin, glucose, TG and FFA concentrations between *Lepr wt/-* and wt/wt (isolated 2 h under cold-load) | W+, M- |
| Chung et al. 1998(41) | mouse; C57BL/6J *Lepr wt/-* and wt/wt; sacrificed between 39 and 120 days after 2-h fast | No statistically significant difference in BMI between genotypic classes of the same sex | 47.3% higher in *Lepr wt/-* vs wt/wt (p<0.05); BF 35.2% higher in *Lepr wt/-* vs wt/wt (p<0.05) | Mean levels twice as high in *Lepr wt/-* vs wt/wt; if adjusted for fat mass: leptin was 19.8% higher in *Lepr wt/-* vs wt/wt (p<0.05) | n.a. | W+, L+ |
| Kowalski et al. 1998(770) | Zucker rat; wt/wt vs *Lepr wt/-* vs *Lepr -/-* rats at postnatal day 5-18 | No significant differences in body weight among genotypes was observed at any age tested | n.a. | n.a. | n.a. | W- |
| Kraeft et al. 1999(71) | rat; offspring of Zucker rat and Brown Norway hybrid pups: wt/wt, *Lepr wt/-* and *Lepr -/-* at 1 week age | Slightly lower body weight in *Lepr wt/-* vs wt/wt (p-value not reported) | Lower fat mass in *Lepr wt/-* vs wt/wt (p<0.05) | n.a. | n.a. | W+ |
| Cleary and Phillips 1999(67) | Zucker rat; wt/wt vs female *Lepr wt/-* at 10 weeks age | Both groups lean, but body weight (p<0.05) and inguinal (p<0.05) and retroperitoneal fat (p>0.05) were heavier in *Lepr wt/-* than in wt/wt | Combined fat pad to body weight ratio higher in *Lepr wt/-* than in wt/wt (p>0.05). BF%: Sum of three fat depots (inguinal, retroperitoneal, parametrial) made a greater portion of body weight in *Lepr wt/-* vs wt/wt (p<0.05) | Serum leptin significantly higher in *Lepr wt/-* vs wt/wt (p<0.05) | No differences in serum TG, cholesterol, insulin or glucose concentrations between *Lepr wt/-* vs wt/wt | W+, L+, M- |
| Yamashita et al. 2001(64) | mice; C57BLKsJ wt/wt vs *Lepr wt/-* in pre-pregnant and pregnant state, offspring | No differences in body weight between *Lepr wt/-* and wt/wt mice in total weight; at term, *Lepr wt/-* had 33% greater weight gain than wt/wt (p<0.05) | BF%: At term, *Lepr wt/-* had 20% higher adipose tissue than wt/wt (p<0.05) | Leptin levels higher in *Lepr wt/-* mice compared with wt/wt mice (p<0.05) | Fasting glucose and insulin similar in *Lepr wt/-* and wt/wt in prepregnant state; fasting insulin increased to 3 fold in wt/wt vs to 2.2 in *Lepr wt/-* mice (p<0.05) | W+, L+, M- |
| Heo et al. 2002(68) | BNZ rat; wt/wt vs *Lepr wt/-*, after 7-week high fat vs basal diet | / | Higher epidydimal fat pad weight in *Lepr wt/-* than in wt/wt in both diets (p<0.05) | Leptin levels in homogenized adipose tissue were significantly higher in *Lepr wt/-* than in wt/wt under basal diet (p<0.05) | No difference in insulin levels between *Lepr wt/-* and wt/wt in basal diet; triglyceride levels in liver higher in *Lepr wt/-*vs wt/wt independent of diet; increased adipocyte lipogenic enzyme activity in *Lepr wt/-*vs wt/wt (p<0.05) | W+, L+, M+ |
| Tamasi et al. 2003(76) | Zucker rat; wt/wt vs *Lepr wt/-* and *Lepr -/-*at 9 and 15 weeks age | No significant differences in body weight between *Lepr wt/-* and wt/wt at any age tested | n.a. | n.a. | No significant difference in serum cholesterol, triglycerides and alkaline phosphatase between *Lepr wt/-* and wt/wt | W-, M- |
| Yamashita et al. 2003(65) | mouse; C57BLKS/Jwt/wt vs*Lepr wt/-* in prepregnant and pregnant state, offspring | Prepregnant weight was slightly higher in *Lepr wt/-* than in wt/wt mice fed ad lib; maternal weight gain in *Lepr wt/-* mice fed ad lib greater than in wt/wt fed ad lib (p<0.05); offspring of *Lepr wt/-* and wt/wt similar in weight | Significantly greater body fat percentage in female offspring of *Lepr wt/-* mothers (p<0.05) | n.a. | Glucose levels similar in *Lepr wt/-* and wt/wt, while insulin higher in *Lepr wt/-* than in wt/wt in prepregnant state; higher glucose in *Lepr wt/-* than in wt/wt in pregnant state; fasting insulin higher in female offspring from *Lepr wt/-* than from wt/wt mothers (p<0.05) | W+, M+ |
| Hirose et al. 2004(56) | mouse; C57BLKS/J-wt/wt, *Lepr wt/-* and *Lepr -/-* males, at 4 weeks age | Comparable between *Lepr wt/-* and wt/wt | Epidydimal fat significantly higher in *Lepr wt/-* than in wt/wt (p<0.05) | Comparable between *Lepr wt/-* and wt/wt | Blood glucose and insulin levels comparable between *Lepr wt/-* and wt/wt | W+, L-, M- |
| Levine et al. 2006(58) | mouse; C57BL/6J wt/wt, *Lepr wt/-* and *Lepr -/-* at 12-13 weeks age | Body weight was lower in *Lepr wt/-* compared to wt/wt (p<0.05) | / | / | Blood glucose was lower in *Lepr wt/-* compared to wt/wt | W+, M+ |
| Masuyama et al. 2005(72) | rat; Spontaneously Diabetic Torii (SDT) wt/wt, *Lepr wt/-*, *Lepr -/-* at 14 weeks of age | No differences in body mass index between *Lepr wt/-* and wt/wt | Retroperitoneal and intrascapular fat pad weight similar in wt/wt and *Lepr wt/-* | No differences in leptin levels between *Lepr wt/-* and wt/wt | No differences in blood glucose and insulin levels between *Lepr wt/-* and wt/wt | W-, M- |
| Shi et al. 2007(62) | mouse; C57BL/6J wt/wt vs *Lepr wt/-* vs *Lepr -/-* at 10-12 weeks age | Slightly less body weight in *Lepr wt/-* than wt/wt (p-value not reported) | n.a. | n.a. | Blood glucose levels higher in *Lepr wt/-* than in wt/wt (p<0.05); longer reperfusion time after renal ischemia than in wt/wt (p<0.05) | W-, M+ |
| Kanda et al. 2009(57) | mouse; (obtained from Clea Japan) six-week-old male wt/wt, *Lepr wt/-* and *Lepr -/-* at 8 weeks age | Body weight of *Lepr wt/-* mice was higher than in wt/wt (p<0.05) | n.a. | n.a. | Fasting blood glucose, insulin, triglycerides higher in *Lepr wt/-* mice than in wt/wt (p<0.05); not esterified fatty acids similar in *Lepr wt/-* and in wt/wt | W+, M+ |
| Moralejo et al. 2010(73) | rat; BBDR , *Lepr wt/-* or *Lepr -/-* rat line at 30-180 days of age | No differences between wt/wt and *Lepr wt/-* | n.a. | n.a. | No differences in blood glucose between wt/wt and *Lepr wt/-* | W-, M- |
| Himeno et al. 2009(69) | Zucker rat; male wt/wt vs *Lepr wt/-* and *Lepr -/-* till age 18 weeks | No significant difference in body weight between *Lepr wt/-* and wt/wt at 18 weeks | No significant difference in epidydimal fat weight between *Lepr wt/-* and wt/wt at 18 weeks | Slightly but significantly elevated in *Lepr wt/-* vs wt/wt (p<0.05) | Slightly but significantly elevated serum insulin and triglycerid levels in *Lepr wt/-* vs wt/wt (p<0.05), serum glucose, FFA and adiponectin not significantly different between *Lepr wt/-* and wt/wt (p>0.05). Higher hepatic triglyceride levels in *Lepr wt/-* than in wt/wt; liver weight increased in *Lepr wt/-*vs wt/wt (p<0.05) | W-, L+,M+ |
| Harrod et al. 2011(55) | mouse; C57BLKS/J *Lepr wt/-* and wt/wt | *Lepr wt/-* (31 weeks old) weighed more than wt/wt (22 weeks old) (p<0.05) | n.a. | n.a. | No differences in fasting glucose  levels between wt/wt and *Lepr wt/-* mice | W+, M- |
| Stanley et al. 2011(63) | mouse; C57BL/6J wt/wt vs *Lepr wt/-* female pregnant and non-pregnant mice, offspring | No difference between non-pregnant *Lepr wt/-* and wt/wt (p>0.05); pregnant *Lepr wt/-* significantly heavier than wt/wt v; Pups born from *Lepr wt/-* mice significantly heavier than those born from wt/wt (p<0.05) | n.a. | n.a. | No difference in fasting glucose in non-pregnant *Lepr wt/-* vs wt/wt (p>0.05); fasting glucose significantly higher in pregnant *Lepr wt/-* than in wt/wt (p<0.05) | W+, M+ |
| Haldar et al. 2014(79) | sheep; SNPs identified in *Lepr* gene: chr:1:40787726; chr:1:40857869; chr:1:40858019 | Lower weight at birth and higher weight in adulthood of *Lepr wt/-*vs wt/wt (p<0.05) | n.a. | n.a. | n.a. | W+ |
| Choi et al. 2015(54) | mouse; (obtained from Korea Research Institute), wt/wt, *Lepr wt/-*, *Lepr -/-*; female 5-30 weeks age | *Lepr wt/-* and wt/wt had similar body weight | n.a. | n.a. | Blood glucose similar in *Lepr wt/-* and wt/wt | W-, M- |
| Nadif et al. 2015(59) | mouse; pregnant wt/wt, *Lepr wt/-* dams, nonpregnant counterparts, offspring | *Lepr wt/-* offspring had higher birth weight than wt/wt offspring (p<0.05);  male wt/wt offspring of *Lepr wt/-* dams had higher weight than wt/wt offspring of wt/wt dams (p<0.05) | n.a. | *Lepr wt/-* dams had higher leptin levels than wt/wt; compared to wt/wt (p<0.05), *Lepr wt/-* offspring had higher leptin levels at the age of 6 months (p<0.05) | Pregnant *Lepr wt/-* dams had impaired glucose tolerance in comparison to pregnant wt/wt (p<0.05) | W+, L+, M+ |
| Pollock et al. 2015(61) | mouse; B6.BKS(D)- *Lepr wt/-* males mated to C57Bl/6 wt/wt females to establish *Lepr wt/-*colony | *Lepr wt/-* dams body weight was significantly higher than in wt/wt dams (p<0.05); offspring from *Lepr wt/-* dams weighed significantly less than offspring of wt/wt dams at age 23-31 weeks (p<0.05) | n.a. | Leptin concentration in *Lepr wt/-* dams significantly higher than in wt/wt dams (p<0.05) | *Lepr wt/-* dams had slightly better glucose tolerance than wt/wt dam (p<0.05)s, insulin levels in *Lepr wt/-* and wt/wt were similar at gestational d. 18.5 | W+, L+, M- |
| Plows et al. 2017(60) | mouse; B6.BKS(D) and C57BL6J. *Lepr wt/-* vs wt/wt mice born from *Lepr wt/-* parents vs control | pre-pregnancy weight gain in *Lepr wt/-* mice compared to wt/wt (p<0.05) | Higher fat pads weight in *Lepr wt/-* than in wt/wt or control C57BL6J mice (p<0.05) | Hyperleptinemia in *Lepr wt/-* vs wt/wt and control mice (p<0.05) | No evidence of glucose intolerance or hyperinsulinemia in pregnant *Lepr wt/-* mice | W+, L+, M- |

Abbreviations: FFA: free fatty acids; n.a.: not available; TG: triglycerides; Differences *Lepr wt/-* vs *wt/wt*: W: weight status and body fat, L: leptin levels, M: metabolic abnormalities. -: no differences observed; +: differences observed