

Article title: Transcriptome analysis of adipose tissue from pigs divergent in feed efficiency reveals alteration in gene networks related to adipose growth, lipid metabolism, extracellular matrix and immune response

Journal name: Molecular Genetics and Genomics

Authors: Justyna Horodyska^{1,2}, Henry Reyer², Klaus Wimmers^{2,3}, Nares Trakooljul², Peadar G. Lawlor⁴, Ruth M. Hamill^{1*}

¹Teagasc, Food Research Centre, Ashtown, Dublin 15, Ireland

²Leibniz Institute for Farm Animal Biology (FBN), Institute for Genome Biology, Dummerstorf, Germany

³Faculty of Agricultural and Environmental Sciences, University Rostock, Germany

⁴Teagasc, Pig Development Department, AGRIC, Moorepark, Fermoy, Co. Cork, Ireland

*Corresponding author: Ruth.Hamill@teagasc.ie

Table S2 Molecular and cellular functions significantly enriched with differentially expressed genes including a list of sub-functions contained within each category.

Category	P-value range	Sub-functions*
Cellular Movement	3.10E-12 - 8.25E-04	cellular infiltration by inflammatory leukocytes (0.56), chemorepulsion (0.15), invasion of cells (-0.14), migration of cancer cells (-0.26), cellular infiltration by leukocytes (-0.31), cellular infiltration (-0.49), migration of tumor cells (-0.5), cell movement of muscle cells (-0.86), cell movement of smooth muscle cells (-0.86), infiltration by neutrophils (-0.92), cellular infiltration by granulocytes (-1.04), cellular infiltration by phagocytes (-1.06), chemoattraction (-1.21), migration of muscle cells (-1.34), cell movement of keratinocytes (-1.41), cell movement of macrophages (-1.59), extravasation (-1.67), cell movement of granulocytes (-1.68), cell movement of neutrophils (-1.86), recruitment of neutrophils (-1.96), chemotaxis of myeloid cells (-2.01), chemotaxis (-2.03), migration of cells (-2.03), cell movement of endothelial cells (-2.05), movement of vascular endothelial cells (-2.05), cell movement (-2.07), cell movement of myeloid cells (-2.08), recruitment of myeloid cells (-2.15), recruitment of cells (-2.18), recruitment of phagocytes (-2.30), recruitment of blood cells (-2.31), chemotaxis of phagocytes (-2.32), chemotaxis of neutrophils (-2.37), migration of mononuclear leukocytes (-2.44), cell movement of leukocytes (-2.50), cell movement of antigen presenting cells (-2.55), chemotaxis of leukocytes (-2.56), cell movement of phagocytes (-2.62), cell movement of mononuclear leukocytes (-2.70), leukocyte migration (-2.82), cell movement of blood cells (-2.93)

Cell Death and Survival	2.93E-08 - 8.39E-04	neuronal cell death (1.48), degeneration of neurons (1.11), apoptosis of blood cells (0.06), necrosis (0.02), apoptosis (-0.01), cytolysis (-0.05), apoptosis of leukocytes (-0.2), necrosis of renal tubule (-0.22), cell death of leukocyte cell lines (-0.25), cell death of tumor cell lines (-0.27), apoptosis of tumor cell lines (-0.44), apoptosis of hematopoietic cell lines (-0.45), cell death of blood cells (-0.5), cell death of hematopoietic cell lines (-0.55), necrosis of epithelial tissue (-0.64), cell viability of breast cell lines (-0.66), cell death of immune cells (-0.66), cell death (-0.77), cell death of phagocytes (-0.9), apoptosis of phagocytes (-1), apoptosis of myeloid cells (-1), cell death of connective tissue cells (-1.11), apoptosis of kidney cells (-1.48), cell death of myeloid cells (-1.48), cell death of bone marrow-derived macrophages (-1.96), cell viability (-2.00), cell survival (-2.18)
Cellular Development	3.67E-07 - 8.14E-04	proliferation of cancer cells (1.53), differentiation of neurons (1.03), granulopoiesis (0.88), cell proliferation of kidney cell lines (0.54), cell proliferation of breast cancer cell lines (0.39), differentiation of myeloid leukocytes (0.39), leukopoiesis (0.13), proliferation of stromal cells (0.06), proliferation of muscle cells (-0.19), proliferation of vascular smooth muscle cells (-0.29), differentiation of nervous system (-0.31), proliferation of smooth muscle cells (-0.43), expansion of leukocytes (-0.44), tubulation of endothelial cells (-0.47), hematopoiesis of mononuclear leukocytes (-0.56), differentiation of connective tissue cells (-0.62), expansion of blood cells (-0.63), endothelial cell development (-0.71), proliferation of lung cells (-0.75), lymphopoiesis (-0.77), proliferation of skin cell lines (-0.94), cell proliferation of tumor cell lines (-0.98), maturation of cells (-1.15), cell proliferation of leukocyte cell lines (-1.38), proliferation of blood cells (-2.23), proliferation of immune cells (-2.36)
Cellular Growth & Proliferation	3.67E-07 - 8.14E-04	proliferation of cancer cells (1.53), granulopoiesis (0.88), cell proliferation of kidney cell lines (0.54), cell proliferation of breast cancer cell lines (0.39), differentiation of myeloid leukocytes (0.39), leukopoiesis (0.13), proliferation of stromal cells (0.06), expansion of lymphatic system cells (-0.06), proliferation of muscle cells (-0.19), proliferation of vascular smooth muscle cells (-0.29), proliferation of smooth muscle cells (-0.43), expansion of leukocytes (-0.44), hematopoiesis of mononuclear leukocytes (-0.56), expansion of blood cells (-0.63), expansion of cells (-0.69), endothelial cell development (-0.71), proliferation of lung cells (-0.75), lymphopoiesis (-0.77), proliferation of skin cell lines (-0.94), cell proliferation of tumor cell lines (-0.98), cell proliferation of hematopoietic cell lines (-1.27), cell proliferation of leukocyte cell lines (-1.38), stimulation of connective tissue cells (-1.41), proliferation of lymphatic system cells (-1.97), proliferation of blood cells (-2.23), proliferation of immune cells (-2.36)
Cell Morphology	3.74E-07 - 4.16E-04	collapse of growth cone (0.59), formation of cellular protrusions (-0.24), tubulation of endothelial cells (-0.47), tubulation of cells (-0.67)
Lipid Metabolism	6.59E-06 - 8.07E-04	fatty acid metabolism (-0.15), synthesis of prostaglandin E2 (-0.36), synthesis of lipid (-1.25), metabolism of eicosanoid (-1.27), synthesis of prostaglandin (-1.33), synthesis of eicosanoid (-1.77), synthesis of fatty acid (-1.77)
Small Molecule Biochemistry	6.59E-06 - 8.07E-04	fatty acid metabolism (-0.15), quantity of creatinine in blood (-0.34), synthesis of prostaglandin E2 (-0.36), synthesis of lipid (-1.25), metabolism of eicosanoid (-1.27), synthesis of prostaglandin (-1.33), synthesis of eicosanoid (-1.77), synthesis of fatty acid (-1.77)
Cellular Function & Maintenance	8.85E-06 - 7.59E-04	function of blood cells (1.88), formation of cellular protrusions (-0.24), microtubule dynamics (-0.46), organization of cytoskeleton (-0.57), organization of cytoplasm (-0.57), endothelial cell development (-0.71), phagocytosis (-2.01), ion homeostasis of cells (-3.24)
Cellular Compromise	9.03E-06 - 2.79E-04	degeneration of cells (1.52), degeneration of neurons (1.11), collapse of growth cone (0.59)
Cell-To-Cell Signalling & Interaction	1.20E-05 - 7.52E-04	adhesion of leukocyte cell lines (-1.07), binding of endothelial cells (-1.15), chemoattraction (-1.21), stimulation of connective tissue cells (-1.41), activation of connective tissue cells (-1.91), recruitment of neutrophils (-1.96), activation of phagocytes (-1.99), recruitment of myeloid cells (-2.15), adhesion of myeloid cells (-2.15), recruitment of cells

		(-2.18), recruitment of phagocytes (-2.30), activation of cells (-2.30), recruitment of blood cells (-2.31), binding of professional phagocytic cells (-2.71)
Cell Cycle	1.55E-05 - 5.54E-04	binding of DNA (-2.00), binding of protein binding site (-2.22)
Gene Expression	1.55E-05 - 5.68E-04	activation of DNA endogenous promoter (0.5), transcription of DNA (0.26), transcription (-0.45), transcription of RNA (-0.48), transactivation of RNA (-0.81), binding of DNA (-2.00), binding of protein binding site (-2.22)
Cellular Assembly & Organization	3.05E-05 - 6.32E-04	formation of cellular protrusions (-0.24), microtubule dynamics (-0.46), organization of cytoskeleton (-0.57), organization of cytoplasm (-0.57)
Protein Synthesis	4.49E-05 - 4.49E-05	quantity of enzyme (0.19)
Post-Translational Modification	1.09E-04 - 1.09E-04	phosphorylation of protein (-2.33)
DNA Replication, Recombination & Repair	6.85E-04 - 6.85E-04	synthesis of DNA (0.21)
Cell Signalling	7.19E-04 - 7.19E-04	adhesion of leukocyte cell lines (-1.07), binding of endothelial cells (-1.15), chemoattraction (-1.21), stimulation of connective tissue cells (-1.41), activation of connective tissue cells (-1.91), recruitment of neutrophils (-1.96), activation of phagocytes (-1.99), recruitment of myeloid cells (-2.15), adhesion of myeloid cells (-2.15), recruitment of cells (-2.18), recruitment of phagocytes (-2.30), activation of cells (-2.30), recruitment of blood cells (-2.31), binding of professional phagocytic cells (-2.71)
Vitamin & Mineral Metabolism	7.19E-04 - 7.19E-04	elevation of Ca ²⁺ in cytosol (NA)
Drug Metabolism	8.07E-04 - 8.07E-04	synthesis of prostaglandin E2 (-0.36)

*Significantly inhibited (z-score < -2) sub-categories are highlighted in green; NA: no available z-score.