

REFERENCE LIST

REFERENCE LIST

- Aarden EM, Wassenaar AM, Alblas MJ and Nijweide PJ (1996). Immunocytochemical demonstration of extracellular matrix proteins in isolated osteocytes. *Histochem Cell Biol* 106:495-501
- Aicher A, Kollet O, Heeschen C, Liebner S, Urbich C, Ihling C, Orlandi A, Lapidot T, Zeiher AM and Dimmeler S (2008). The Wnt antagonist Dickkopf-1 mobilizes vasculogenic progenitor cells via activation of the bone marrow endosteal stem cell niche. *Circ Res* 103:796-803
- Alfieri CM, Cheek J, Chakraborty S and Yutzey KE (2010). Wnt signaling in heart valve development and osteogenic gene induction. *Dev Biol* 338:127-35
- Almeida M, Han L, Bellido T, Manolagas SC and Kousteni S (2005). Wnt proteins prevent apoptosis of both uncommitted osteoblast progenitors and differentiated osteoblasts by beta-catenin-dependent and -independent signaling cascades involving Src/ERK and phosphatidylinositol 3-kinase/AKT. *J Biol Chem* 280:41342-51
- Ambrosetti D, Holmes G, Mansukhani A and Basilico C (2008). Fibroblast growth factor signaling uses multiple mechanisms to inhibit Wnt-induced transcription in osteoblasts. *Mol Cell Biol* 28:4759-71
- An JJ, Han DH, Kim DM, Kim SH, Rhee Y, Lee EJ and Lim SK (2007). Expression and regulation of osteoprotegerin in adipose tissue. *Yonsei Med J* 48:765-772
- Anderson DM, Maraskovsky E, Billingsley WL, Dougall WC, Tometsko ME, Roux ER, Teepe MC, DuBose RF, Cosman D and Galibert L (1997). A homologue of the TNF receptor and its ligand enhance T-cell growth and dendritic-cell function. *Nature* 390:175-179
- Avignon A, Sultan A, Piot C, Elaerts S, Cristol JP and Dupuy AM (2005). Osteoprotegerin is associated with silent coronary artery disease in high-risk but asymptomatic type 2 diabetic patients. *Diabetes Care* 28:2176-80
- Avvisato CL, Yang X, Shah S, Hoxter B, Li W, Gaynor R, Pestell R, Tozeren A and Byers SW (2007). Mechanical force modulates global gene expression and beta-catenin signaling in colon cancer cells. *J Cell Sci* 120:2672-82
- Baek SH, Kioussi C, Briata P, Wang D, Nguyen HD, Ohgi KA, Glass CK, Wynshaw-Boris A, Rose DW and Rosenfeld MG (2003). Regulated subset of G1 growth-

REFERENCE LIST

control genes in response to derepression by the Wnt pathway. *Proc Natl Acad Sci U S A* 100:3245-50

Bajada S, Marshall MJ, Wright KT, Richardson JB and Johnson WE (2009). Decreased osteogenesis, increased cell senescence and elevated Dickkopf-1 secretion in human fracture non union stromal cells. *Bone* 45:726-735

Baksh D, Boland GM and Tuan RS (2007). Cross-talk between Wnt signaling pathways in human mesenchymal stem cells leads to functional antagonism during osteogenic differentiation. *J Cell Biochem* 101:1109-24

Balemans W, Ebeling M, Patel N, Van Hul E, Olson P, Dioszegi M, Lacza C, Wuyts W, Van Den EJ, Willems P, Paes-Alves AF, Hill S, Bueno M, Ramos FJ, Tacconi P, Dikkers FG, Stratakis C, Lindpaintner K, Vickery B, Foerzler D and Van Hul W (2001). Increased bone density in sclerosteosis is due to the deficiency of a novel secreted protein (SOST). *Hum Mol Genet* 10:537-543

Ball SG, Shuttleworth CA and Kielty CM (2007). Vascular endothelial growth factor can signal through platelet-derived growth factor receptors. *J Cell Biol* 177:489-500

Baron, R.E. (1996). Anatomy and ultrastructure of bone. In Primer on the metabolic bone diseases and disorders of mineral metabolism. M.J. Favus, editor. Lippincott-Raven Publishers. New York, NY.

Bergh JJ, Xu Y and Farach-Carson MC (2004). Osteoprotegerin expression and secretion are regulated by calcium influx through the L-type voltage-sensitive calcium channel. *Endocrinology* 145:426-36

Bianco P, Silvestrini G, Ballanti P and Bonucci E (1992). Paramyxovirus-like nuclear inclusions identical to those of Paget's disease of bone detected in giant cells of primary oxalosis. *Virchows Arch A Pathol Anat Histopathol* 421:427-433

Bielecki T, Gazdzik TS and Szczepanski T (2008). Benefit of percutaneous injection of autologous platelet-leukocyte-rich gel in patients with delayed union and nonunion. *Eur Surg Res* 40:289-296

Bilkovski R, Schulte DM, Oberhauser F, Gomolka M, Udelhoven M, Hettich MM, Roth B, Heidenreich A, Gutschow C, Krone W and Laudes M (2010). Role of WNT-5a in the determination of human mesenchymal stem cells into preadipocytes. *J Biol Chem* 285:6170-8

REFERENCE LIST

- Birch MA, Taylor W, Fraser WD, Ralston SH, Hart CA and Gallagher JA (1994). Absence of paramyxovirus RNA in cultures of pagetic bone cells and in pagetic bone. *J Bone Miner Res* 9:11-16
- Blair MM, Carson DS and Barrington R (2000). Bisphosphonates in the prevention and treatment of glucocorticoid-induced osteoporosis. *J Fam Pract* 49:839-848
- Blanquaert F, Delany AM and Canalis E (1999). Fibroblast growth factor-2 induces hepatocyte growth factor/scatter factor expression in osteoblasts. *Endocrinology* 140:1069-74
- Bodine PV, Billiard J, Moran RA, Ponce-de-Leon H, McLarney S, Mangine A, Scrimo MJ, Bhat RA, Stauffer B, Green J, Stein GS, Lian JB and Komm BS (2005). The Wnt antagonist secreted frizzled-related protein-1 controls osteoblast and osteocyte apoptosis. *J Cell Biochem* 96:1212-30
- Bodine PV, Zhao W, Kharode YP, Bex FJ, Lambert AJ, Goad MB, Gaur T, Stein GS, Lian JB and Komm BS (2004). The Wnt antagonist secreted frizzled-related protein-1 is a negative regulator of trabecular bone formation in adult mice. *Mol Endocrinol* 18:1222-1237
- Boland GM, Perkins G, Hall DJ and Tuan RS (2004). Wnt 3a promotes proliferation and suppresses osteogenic differentiation of adult human mesenchymal stem cells. *J Cell Biochem* 93:1210-30
- Boyce BF, Xing L, Shakespeare W, Wang Y, Dalgarno D, Iulucci J and Sawyer T (2003). Regulation of bone remodeling and emerging breakthrough drugs for osteoporosis and osteolytic bone metastases. *Kidney Int Suppl* 85:S2-5
- Boyden LM, Mao J, Belsky J, Mitzner L, Farhi A, Mitnick MA, Wu D, Insogna K and Lifton RP (2002). High bone density due to a mutation in LDL-receptor-related protein 5. *N Engl J Med* 346:1513-1521
- Brandolini F, Bacchini P, Moscato M and Bertoni F (1997). Chondrosarcoma as a complicating factor in Paget's disease of bone. *Skeletal Radiol* 26:497-500
- Brechtel AB and Lerner UH (2002). Characterization of bradykinin receptors in a human osteoblastic cell line. *Regul Pept* 103:39-51
- Brechtel AB and Lerner UH (2007). Bradykinin potentiates cytokine-induced prostaglandin biosynthesis in osteoblasts by enhanced expression of

REFERENCE LIST

cyclooxygenase 2, resulting in increased RANKL expression. *Arthritis Rheum* 56:910-23

Brisken C, Heineman A, Chavarria T, Elenbaas B, Tan J, Dey SK, McMahon JA, McMahon AP and Weinberg RA (2000). Essential function of Wnt-4 in mammary gland development downstream of progesterone signaling. *Genes Dev* 14:650-4

Broudy VC (1997). Stem cell factor and hematopoiesis. *Blood* 90:1345-64

Browner WS, Lui LY and Cummings SR (2001). Associations of serum osteoprotegerin levels with diabetes, stroke, bone density, fractures, and mortality in elderly women. *J Clin Endocrinol Metab* 86:631-7

Brunetti G, Colucci S, Rizzi R, Mori G, Colaianni G, Oranger A, Zallone A, Liso V and Grano M (2006). The role of OPG/TRAIL complex in multiple myeloma: the OPG/TRAIL complex in an in vitro osteoclastogenesis model derived from human multiple myeloma-bone disease. *Ann N Y Acad Sci* 1068:334-40

Brunkow ME, Gardner JC, Van Ness J, Paeper BW, Kovacevich BR, Proll S, Skonier JE, Zhao L, Sabo PJ, Fu Y, Alisch RS, Gillett L, Colbert T, Tacconi P, Galas D, Hamersma H, Beighton P and Mulligan J (2001). Bone dysplasia sclerosteosis results from loss of the SOST gene product, a novel cystine knot-containing protein. *Am J Hum Genet* 68:577-89

Brynczka C and Merrick BA (2007). Nerve growth factor potentiates p53 DNA binding but inhibits nitric oxide-induced apoptosis in neuronal PC12 cells. *Neurochem Res* 32:1573-85

Bucay N, Sarosi I, Dunstan CR, Morony S, Tarpley J, Capparelli C, Scully S, Tan HL, Xu W, Lacey DL, Boyle WJ and Simonet WS (1998). Osteoprotegerin-deficient mice develop early onset osteoporosis and arterial calcification. *Genes Dev* 12:1260-1268

Buckwalter JA, Glimcher MJ, Cooper RR and Recker R (1996). Bone biology. II: Formation, form, modeling, remodeling, and regulation of cell function. *Instr Course Lect* 45:387-399

Burgess TL, Qian Y, Kaufman S, Ring BD, Van G, Capparelli C, Kelley M, Hsu H, Boyle WJ, Dunstan CR, Hu S and Lacey DL (1999). The ligand for osteoprotegerin (OPGL) directly activates mature osteoclasts. *J Cell Biol* 145:527-538

REFERENCE LIST

- Caplan AI (1991). Mesenchymal stem cells. *J Orthop Res* 9:641-50
- Caplan AI and Bruder SP (2001). Mesenchymal stem cells: building blocks for molecular medicine in the 21st century. *Trends Mol Med* 7:259-64
- Carmon KS and Loose DS (2008). Wnt7a interaction with Fzd5 and detection of signaling activation using a split eGFP. *Biochem Biophys Res Commun* 368:285-291
- Caverzasio J and Manen D (2007). Essential role of Wnt3a-mediated activation of mitogen-activated protein kinase p38 for the stimulation of alkaline phosphatase activity and matrix mineralization in C3H10T1/2 mesenchymal cells. *Endocrinology* 148:5323-30
- Caverzasio J (2008). Strontium ranelate promotes osteoblastic cell replication through at least two different mechanisms. *Bone* 42:1131-6
- Cavey JR, Ralston SH, Sheppard PW, Ciani B, Gallagher TR, Long JE, Searle MS and Layfield R (2006). Loss of ubiquitin binding is a unifying mechanism by which mutations of SQSTM1 cause Paget's disease of bone. *Calcif Tissue Int* 78:271-277
- Celotti F, Colciago A, Negri-Cesi P, Pravettoni A, Zaninetti R and Sacchi MC (2006). Effect of platelet-rich plasma on migration and proliferation of SaOS-2 osteoblasts: role of platelet-derived growth factor and transforming growth factor-beta. *Wound Repair Regen* 14:195-202
- Centrella M, McCarthy TL and Canalis E (1991). Activin-A binding and biochemical effects in osteoblast-enriched cultures from fetal-rat parietal bone. *Mol Cell Biol* 11:250-8
- Cha SW, Tadjuidje E, Tao Q, Wylie C and Heasman J (2008). Wnt5a and Wnt11 interact in a maternal Dkk1-regulated fashion to activate both canonical and non-canonical signaling in *Xenopus* axis formation. *Development* 135:3719-29
- Chae HJ, Kang JS, Byun JO, Han KS, Kim DU, Oh SM, Kim HM, Chae SW and Kim HR (2000). Molecular mechanism of staurosporine-induced apoptosis in osteoblasts. *Pharmacol Res* 42:373-81
- Chagraoui H, Tulliez M, Smayra T, Komura E, Giraudier S, Yun T, Lassau N, Vainchenker W and Wendling F (2003). Stimulation of osteoprotegerin production is responsible for osteosclerosis in mice overexpressing TPO. *Blood* 101:2983-9

REFERENCE LIST

Chambers TJ, Athanasou NA and Fuller K (1984). Effect of parathyroid hormone and calcitonin on the cytoplasmic spreading of isolated osteoclasts. *J Endocrinol* 102:281-6

Chamorro MN, Schwartz DR, Vonica A, Brivanlou AH, Cho KR and Varmus HE (2005). FGF-20 and DKK1 are transcriptional targets of beta-catenin and FGF-20 is implicated in cancer and development. *EMBO J* 24:73-84

Chang EJ, Kim HH, Huh JE, Kim IA, Seung Ko J, Chung CP and Kim HM (2005). Low proliferation and high apoptosis of osteoblastic cells on hydrophobic surface are associated with defective Ras signaling. *Exp Cell Res* 303:197-206

Cheon H, Boyle DL and Firestein GS (2004). Wnt1 inducible signaling pathway protein-3 regulation and microsatellite structure in arthritis. *J Rheumatol* 31:2106-14.

Cho SW, Her SJ, Sun HJ, Choi OK, Yang JY, Kim SW, Kim SY and Shin CS (2008). Differential effects of secreted frizzled-related proteins (sFRPs) on osteoblastic differentiation of mouse mesenchymal cells and apoptosis of osteoblasts. *Biochem Biophys Res Commun* 367:399-405

Cho SW, Yang JY, Sun HJ, Jung JY, Her SJ, Cho HY, Choi HJ, Kim SW, Kim SY and Shin CS (2009). Wnt inhibitory factor (WIF)-1 inhibits osteoblastic differentiation in mouse embryonic mesenchymal cells. *Bone* 44:1069-1077

Chow JW, Wilson AJ, Chambers TJ and Fox SW (1998). Mechanical loading stimulates bone formation by reactivation of bone lining cells in 13-week-old rats. *J Bone Miner Res* 13:1760-7

Chung UI, Kawaguchi H, Takato T and Nakamura K (2004). Distinct osteogenic mechanisms of bones of distinct origins. *J Orthop Sci* 9:410-414

Chung UI (2004). Essential role of hypertrophic chondrocytes in endochondral bone development. *Endocr J* 51:19-24

Cohen A and Shane E (2003). Osteoporosis after solid organ and bone marrow transplantation. *Osteoporos Int* 4:617-630

Cohen ED, Ihida-Stansbury K, Lu MM, Panettieri RA, Jones PL and Morrissey EE (2009). Wnt signaling regulates smooth muscle precursor development in the mouse lung via a tenascin C/PDGFR pathway. *J Clin Invest* 119:2538-49

REFERENCE LIST

Colla S, Zhan F, Xiong W, Wu X, Xu H, Stephens O, Yaccoby S, Epstein J, Belogie B and Shaughnessy JD Jr. (2007). The oxidative stress response regulates DKK1 expression through the JNK signalling cascade in multiple myeloma cells. *Blood* 109:4470-4477

Collin-Osdoby P (2004). Regulation of vascular calcification by osteoclast regulatory factors RANKL and osteoprotegerin. *Circ Res* 95:1046-1057

Compston JE (2002). Bone marrow and bone: a functional unit. *J Endocrinol* 173: 387-394

Constantinou T, Baumann F, Lacher MD, Saurer S, Friis R and Dharmarajan A (2008). SFRP-4 abrogates Wnt-3a-induced beta-catenin and Akt/PKB signalling and reverses a Wnt-3a-imposed inhibition of in vitro mammary differentiation. *J Mol Signal* 3:10

Cross SS, Yang Z, Brown NJ, Balasubramanian SP, Evans CA, Woodward JK, Neville-Webbe HL, Lippitt JM, Reed MW, Coleman RE and Holen I (2006). Osteoprotegerin (OPG) - a potential new role in the regulation of endothelial cell phenotype and tumour angiogenesis? *Int J Cancer* 118:1901-1908

Cundy T, Davidson J, Rutland MD, Stewart C and DePaoli AM (2005). Recombinant osteoprotegerin for juvenile Paget's disease. *N Engl J Med* 353:918-923

Cundy T, Hegde M, Naot D, Chong B, King A, Wallace R, Mulley J, Love DR, Seidel J, Fawkner M, Banovic T, Callon KE, Grey AB, Reid IR, Middleton-Hardie CA and Cornish J (2002). A mutation in the gene TNFRSF11B encoding osteoprotegerin causes an idiopathic hyperphosphatasia phenotype. *Hum Mol Genet* 11(18):2119-27

Demulder A, Takahashi S, Singer FR, Hosking DJ and Roodman GD (1993). Abnormalities in osteoclast precursors and marrow accessory cells in Paget's disease. *Endocrinology* 133:1978-1982

Dennis S, Aikawa M, Szeto W, d'Amore PA and Papkoff J (1999). A secreted frizzled related protein, FrzA, selectively associates with Wnt-1 protein and regulates wnt-1 signaling. *J Cell Sci* 112:3815-20.

REFERENCE LIST

Deutscher E and Hung-Chang YH (2007). Essential roles of mesenchyme-derived beta-catenin in mouse Mullerian duct morphogenesis. *Dev Biol* 307:227-236

Diarra D, Stolina M, Polzer K, Zwerina J, Ominsky MS, Dwyer D, Korb A, Smolen J, Hoffmann M, Scheinecker C, van der HD, Landewe R, Lacey D, Richards WG and Schett G (2007). Dickkopf-1 is a master regulator of joint remodeling. *Nat Med* 13:156-163.

Dietrich C, Scherwat J, Faust D and Oesch F (2002). Subcellular localisation of beta-catenin is regulated by cell density. *Biochem Biophys Res Commun* 292:195-199

Dunstan CR, Boyce R, Boyce BF, Garrett IR, Izbicka E, Burgess WH and Mundy GR (1999). Systemic administration of acidic fibroblast growth factor (FGF-1) prevents bone loss and increases new bone formation in ovariectomized rats. *J Bone Miner Res* 14:953-9

Duriez J, Flautre B, Blary MC and Hardouin P (1993). Effects of the calcium channel blocker nifedipine on epiphyseal growth plate and bone turnover: a study in rabbit. *Calcif Tissue Int* 52:120-4

Eastell R (2005). Management of bone health in postmenopausal women. *Horm Res* 64:76-80.

Emery JG, McDonnell P, Burke MB, Deen KC, Lyn S, Silverman C, Dul E, Appelbaum ER, Eichman C, DiPrinzio R, Dodds RA, James IE, Rosenberg M, Lee JC and Young PR (1998). Osteoprotegerin is a receptor for the cytotoxic ligand TRAIL. *J Biol Chem* 273:14363-14367

Epstein S (2007). Is Cortical Bone Hip? What determines Cortical Bone Properties? *Bone* 41:S3-8

Etheridge SL, Spencer GJ, Heath DJ and Genever PG (2004). Expression profiling and functional analysis of wnt signaling mechanisms in mesenchymal stem cells. *Stem Cells* 22:849-860

Ezan J, Leroux L, Barandon L, Dufourcq P, Jaspard B, Moreau C, Allières C, Daret D, Couffinhal T and Duplâa C (2004). FrzA/sFRP-1, a secreted antagonist of the Wnt-Frizzled pathway, controls vascular cell proliferation in vitro and in vivo. *Cardiovasc Res* 63:731-8

REFERENCE LIST

Fanucci E, Manenti G, Masala S, Laviani F, Di Costanzo G, Ludovici A, Cozzolino V, Floris R and Simonetti G (2007). Multiparameter characterisation of vertebral osteoporosis with 3-T MR. *Radiol Med* 112:208-223

Feng X (2009). Chemical and biochemical basis of cell-bone matrix interaction in health and disease. *Curr Chem Biol* 3:189-196

Feuerherm AJ, Børset M, Seidel A, Leistad L, Østensen M and Faxvaag A (2001). Elevated levels of osteoprotegerin (OPG) and hepatocyte growth factor (HGF) in rheumatoid arthritis. *Scand J Rheumatol* 30:229-34

Fisher MC, Meyer C, Garber G and Dealy CN (2005). Role of IGFBP2, IGF-I and IGF-II in regulating long bone growth. *Bone* 37:741-50

Flaherty MP, Abdel-Latif A, Li Q, Hunt G, Ranjan S, Ou Q, Tang XL, Johnson RK, Bolli R and Dawn B (2008). Noncanonical Wnt11 signaling is sufficient to induce cardiomyogenic differentiation in unfractionated bone marrow mononuclear cells. *Circulation* 117:2241-52

Fox SW and Lovibond AC (2005). Current insights into the role of transforming growth factor- β in bone resorption. *Mol Cell Endocrinol* 243:19-26

Franz-Odendaal TA, Hall BK and Witten PE (2006). Buried alive: how osteoblasts become osteocytes. *Dev Dyn* 235:176-90

Friedman MS, Oyserman SM and Hankenson KD (2009). Wnt11 promotes osteoblast maturation and mineralisation through R-Spondin 2. *J Biol Chem* 284:14117-14125

Fujita K and Janz S (2007). Attenuation of WNT signaling by DKK-1 and -2 regulates BMP2-induced osteoblast differentiation and expression of OPG, RANKL and M-CSF. *Mol Cancer* 6:71

Fuller K, Wong B, Fox S, Choi Y and Chambers TJ (1998). TRANCE is necessary and sufficient for osteoblast-mediated activation of bone resorption in osteoclasts. *J Exp Med* 188:997-1001

Funk JR, Hale JE, Carmines D, Gooch HL and Hurwitz SR (2000). Biomechanical evaluation of early fracture healing in normal and diabetic rats. *J Orthop Res* 18:126-32

REFERENCE LIST

Galli LM, Barnes T, Cheng T, Acosta L, Anglade A, Willert K, Nusse R and Burrus LW (2006). Differential inhibition of Wnt-3a by Sfrp-1, Sfrp-2, and Sfrp-3. *Dev Dyn* 235:681-90

Gilbert L, He X, Farmer P, Boden S, Kozlowski M, Rubin J and Nanes MS (2000). Inhibition of osteoblast differentiation by tumor necrosis factor-alpha. *Endocrinology* 141:3956-64

Gilbert L, He X, Farmer P, Rubin J, Drissi H, van Wijnen AJ, Lian JB, Stein GS and Nanes MS (2002). Expression of the osteoblast differentiation factor RUNX2 (Cbfa1/AML3/Pebp2alpha A) is inhibited by tumor necrosis factor-alpha. *J Biol Chem* 277:2695-701

Glass DA, Bialek P, Ahn JD, Starbuck M, Patel MS, Clevers H, Taketo MM, Long F, McMahon AP, Lang RA and Karsenty G (2005). Canonical Wnt signaling in differentiated osteoblasts controls osteoclast differentiation. *Dev Cell* 8:751-764

Gong Y, Slee RB, Fukai N, Rawadi G, Roman-Roman S, Reginato AM, Wang H, Cundy T, Glorieux FH, Lev D, Zacharin M, Oexle K, Marcelino J, Suwairi W, Heeger S, Sabatakos G, Apte S, Adkins WN, Allgrove J, Arslan-Kirchner M, Batch JA, Beighton P, Black GC, Boles RG, Boon LM, Borrone C, Brunner HG, Carle GF, Dallapiccola B, De Paepe A, Floege B, Halfhide ML, Hall B, Hennekam RC, Hirose T, Jans A, Juppner H, Kim CA, Keppler-Noreuil K, Kohlschuetter A, LaCombe D, Lambert M, Lemyre E, Letteboer T, Peltonen L, Ramesar RS, Romanengo M, Somer H, Steichen-Gersdorf E, Steinmann B, Sullivan B, Superti-Furga A, Swoboda W, van den Boogaard MJ, Van Hul W, Vikkula M, Votruba M, Zabel B, Garcia T, Baron R, Olsen BR and Warman ML (2001). LDL receptor-related protein 5 (LRP5) affects bone accrual and eye development. *Cell* 107:513-523

Gonzalez-Sancho JM, Aguilera O, Garcia JM, Pendas-Franco N, Pena C, Cal S, Garcia dH, Bonilla F and Munoz A (2005). The Wnt antagonist DICKKOPF-1 gene is a downstream target of beta-catenin/TCF and is downregulated in human colon cancer. *Oncogene* 24:1098-1103

Good DA, Busfield F, Fletcher BH, Lovelock PK, Duffy DL, Kesting JB, Andersen J and Shaw JT (2004). Identification of SQSTM1 mutations in familial Paget's disease in Australian pedigrees. *Bone* 35(1):277-82

REFERENCE LIST

Govender S, Csimma C, Genant HK and Valentin-Opran A (2002). Recombinant human bone morphogenetic protein-2 for treatment of open tibial fractures – a prospective, controlled, randomized study of four hundred and fifty patients. *J Bone Joint Surg Am* 84:2123–34

Gregory CA, Singh H, Perry AS and Prockop DJ (2003). The Wnt signaling inhibitor dickkopf-1 is required for reentry into the cell cycle of human adult stem cells from bone marrow. *J Biol Chem* 278:28067-28078

Gronowicz GA, McCarthy MB, Zhang H and Zhang W (2004). Insulin-like growth factor II induces apoptosis in osteoblasts. *Bone* 35:621-8

Grotewold L and Rüther U (2002). The Wnt antagonist Dickkopf-1 is regulated by Bmp signaling and c-Jun and modulates programmed cell death. *EMBO J* 21:966-975

Gunn WG, Conley A, Deininger L, Olson SD, Prockop DJ and Gregory CA (2006). A crosstalk between myeloma cells and marrow stromal cells stimulates production of DKK1 and interleukin-6: a potential role in the development of lytic bone disease and tumor progression in multiple myeloma. *Stem Cells* 24:986-991

Gustafson B, Eliasson B and Smith U (2010). Thiazolidinediones increase the wingless-type MMTV integration site family (WNT) inhibitor Dickkopf-1 in adipocytes: a link with osteogenesis. *Diabetologia* 53(3):536-40

Gustafsson BI, Thommesen L, Stunes AK, Tommeras K, Westbroek I, Waldum HL, Slordahl K, Tamburstuen MV, Reseland JE and Syversen U (2006). Serotonin and fluoxetine modulate bone cell function in vitro. *J Cell Biochem* 98:139-51

Habas R, Dawid IB and He X (2003). Coactivation of Rac and Rho by Wnt/Frizzled signaling is required for vertebrate gastrulation. *Genes Dev* 17:295-309

Hall CL, Daignault SD, Shah RB, Pienta KJ and Keller ET (2008). Dickkopf-1 expression increases early in prostate cancer development and decreases during progression from primary tumor to metastasis. *Prostate* 68:1396-1404

Hall CL and Keller ET (2006). The role of Wnts in bone metastases. *Cancer Met Rev* 25:551-558

REFERENCE LIST

- Hamadouche M, Mathieu M, Topouchian V, de Pinieux G and Courpied JP (2002). Transfer of Paget's disease from one part of the skeleton to another as a result of autogenous bone-grafting: a case report. *J Bone Joint Surg Am* 84-A:2056-2061
- Hamann KL and Lane NE (2006). Parathyroid hormone update. *Rheum Dis Clin North Am* 32:703-719
- Hancox NM and Boothroyd B (1961). Motion picture and electron microscope studies on the embryonic avian osteoclast. *J Biophys Biochem Cytol* 11:651-661
- Hausler KD, Horwood NJ, Chuman Y, Fisher JL, Ellis J, Martin TJ, Rubin JS and Gillespie MT (2004). Secreted frizzled-related protein-1 inhibits RANKL-dependent osteoclast formation. *J Bone Miner Res* 19:1873-1881
- Heider U, Hofbauer LC, Zavrski I, Kaiser M, Jakob C and Sezer O (2005). Novel aspects of osteoclast activation and osteoblast inhibition in myeloma bone disease. *Biochem Biophys Res Commun* 338:687-693
- Helfrich MH and Hocking LJ (2008). Genetics and aetiology of Pagetic disorders of bone. *Arch Biochem Biophys* 473:172-182
- Hernandez CJ, Majeska RJ and Schaffler MB (2004). Osteocyte density in woven bone. *Bone* 35:1095-1099
- Hilal G, Martel-Pelletier J, Pelletier JP, Ranger P and Lajeunesse D (1998). Osteoblast-like cells from human subchondral osteoarthritic bone demonstrate an altered phenotype in vitro: Possible role in subchondral bone sclerosis. *Arthritis Rheum* 41: 891-899
- Hill PA (1998). Bone remodelling. *Br J Orthod* 25:101-107
- Hoang BH, Kubo T, Healey JH, Sowers R, Mazza B, Yang R, Huvos AG, Meyers PA and Gorlick R (2004a). Expression of LDL receptor-related protein 5 (LRP5) as a novel marker for disease progression in high-grade osteosarcoma. *Int J Cancer* 190:160-111
- Hoang BH, Kubo T, Healey JH, Yang R, Nathan SS, Kolb EA, Mazza B, Meyers PA and Gorlick R (2004b). Dickkopf 3 inhibits invasion and motility of Saos-2 osteosarcoma cells by modulating the Wnt-beta-catenin pathway. *Cancer Res* 64:2734-9

REFERENCE LIST

- Hoang B, Moos M, Jr., Vukicevic S and Luyten FP (1996). Primary structure and tissue distribution of FRZB, a novel protein related to *Drosophila* frizzled, suggest a role in skeletal morphogenesis. *J Biol Chem* 271:26131-26137
- Hocking LJ, Lucas GJ, Daroszewska A, Mangion J, Olavesen M, Cundy T, Nicholson GC, Ward L, Bennett ST, Wuyts W, Van Hul W and Ralston SH (2002). Domain-specific mutations in sequestosome 1 (SQSTM1) cause familial and sporadic Paget's disease. *Hum Mol Genet* 11:2735-2739
- Hofbauer LC, Dunstan CR, Spelsberg TC, Riggs BL and Khosla S (1998). Osteoprotegerin production by human osteoblast lineage cells is stimulated by vitamin D, bone morphogenetic protein-2, and cytokines. *Biochem Biophys Res Commun* 250:776-81
- Hofbauer LC, Gori F, Riggs BL, Lacey DL, Dunstan CR, Spelsberg TC and Khosla S (1999a). Stimulation of osteoprotegerin ligand and inhibition of osteoprotegerin production by glucocorticoids in human osteoblastic lineage cells: potential paracrine mechanisms of glucocorticoid-induced osteoporosis. *Endocrinology* 140:4382-4389
- Hofbauer LC, Khosla S, Dunstan CR, Lacey DL, Boyle WJ and Riggs BL (2000). The roles of osteoprotegerin and osteoprotegerin ligand in the paracrine regulation of bone resorption. *J Bone Miner Res* 15:2-12
- Hofbauer LC, Khosla S, Dunstan CR, Lacey DL, Spelsberg TC and Riggs BL (1999b). Estrogen stimulates gene expression and protein production of osteoprotegerin in human osteoblastic cells. *Endocrinology* 140:4367-4370
- Holen I, Croucher PI, Hamdy FC and Eaton CL (2002). Osteoprotegerin (OPG) is a survival factor for human prostate cancer cells. *Cancer Res* 62:1619-1623
- Hollinger JO, Hart CE, Hirsch SN, Lynch S and Friedlaender GE (2008). Recombinant human platelet-derived growth factor: biology and clinical applications. *J Bone Joint Surg Am* 90 Suppl 1:48-54
- Holmen SL, Zylstra CR, Mukherjee A, Sigler RE, Faugere MC, Bouxsein ML, Deng L, Clemens TL and Williams BO (2005). Essential role of beta-catenin in postnatal bone acquisition. *J Biol Chem* 280:21162-21168

REFERENCE LIST

Hossain M, Irwin R, Baumann MJ and McCabe LR (2005). Hepatocyte growth factor (HGF) adsorption kinetics and enhancement of osteoblast differentiation on hydroxyapatite surfaces. *Biomaterials* 26:2595-602

Hsieh JC, Kodjabachian L, Rebbert ML, Rattner A, Smallwood PM, Samos CH, Nusse R, Dawid IB and Nathans J (1999). A new secreted protein that binds to Wnt proteins and inhibits their activities. *Nature* 398:431-436

Humphrey EL, Williams JH, Davie MW and Marshall MJ (2006). Effects of dissociated glucocorticoids on OPG and RANKL in osteoblastic cells. *Bone* 38:652-661

Iida-Klein A, Lu SS, Cosman F, Lindsay R and Dempster DW (2007). Effects of cyclic vs. daily treatment with human parathyroid hormone (1-34) on murine bone structure and cellular activity. *Bone* 40:391-398

Ikeda T, Kasai M, Utsuyama M and Hirokawa K (2001). Determination of three isoforms of the receptor activator of nuclear factor-kappaB ligand and their differential expression in bone and thymus. *Endocrinology* 142:1419-1426

Imai Y, Terai H, Nomura-Furuwatari C, Mizuno S, Matsumoto K, Nakamura T and Takaoka K (2005). Hepatocyte growth factor contributes to fracture repair by upregulating the expression of BMP receptors. *J Bone Miner Res* 20:1723-30

Ingram RT, Collazo-Clavell M, Tiegs R and Fitzpatrick LA (1996). Paget's disease is associated with changes in the immunohistochemical distribution of noncollagenous matrix proteins in bone. *J Clin Endocrinol Metab* 81:1810-20

Ishimi Y, Miyaura C, Jin CH, Akatsu T, Abe E, Nakamura Y, Yamaguchi A, Yoshiki S, Matsuda T, Hirano T, et al. (1990). IL-6 is produced by osteoblasts and induces bone resorption. *J Immunol* 145:3297-303

Johnson-Pais TL, Wisdom JH, Weldon KS, Cody JD, Hansen MF, Singer FR and Leach RJ (2003). Three novel mutations in SQSTM1 identified in familial Paget's disease of bone. *J Bone Miner Res* 18:1748-1753

Joiakim A, Mathieu PA, Palermo C, Gasiewicz TA and Reiners JJ Jr (2003). The Jun N-terminal kinase inhibitor SP600125 is a ligand and antagonist of the aryl hydrocarbon receptor. *Drug Metab Dispos* 31(11):1279-82

REFERENCE LIST

Jono S, Ikari Y, Shioi A, Mori K, Miki T, Hara K and Nishizawa Y (2002). Serum osteoprotegerin levels are associated with the presence and severity of coronary artery disease. *Circulation* 106:1192-4

Jurdic P, Saltel F, Chabadel A and Destaing O (2006). Podosome and sealing zone: specificity of the osteoclast model. *Eur J Cell Biol* 85:195-202

Kaiser M, Mieth M, Liebisch P, Oberländer R, Rademacher J, Jakob C, Kleeberg L, Fleissner C, Braendle E, Peters M, Stover D, Sezer O and Heider U (2008). Serum concentrations of DKK-1 correlate with the extent of bone disease in patients with multiple myeloma. *Eur J Haematol* 80:490-4

Kamiya N, Kobayashi T, Mochida Y, Yu PB, Yamauchi M, Kronenberg HM and Mishina Y (2010). Wnt Inhibitors Dkk1 and Sost are Downstream Targets of BMP Signaling Through the Type IA Receptor (BMPRIA) in Osteoblasts. *J Bone Miner Res* 25:200-210

Kane N, Jones M, Brosens JJ, Saunders PT, Kelly RW and Critchley HO (2008). Transforming growth factor-beta1 attenuates expression of both the progesterone receptor and Dickkopf in differentiated human endometrial stromal cells. *Mol Endocrinol* 22:716-28

Kanis JA, Devogelaer JP and Gennari C (1996). Practical guide for the use of bone mineral measurements in the assessment of treatment of osteoporosis: a position paper of the European foundation for osteoporosis and bone disease. The Scientific Advisory Board and the Board of National Societies. *Osteoporos Int* 6:256-261

Kansara M, Tsang M, Kodjabachian L, Sims AN, Trivett MK, Ehrich M, Dobrovic A, Slavin J, Choong PFM, Simmons PJ, Dawid IB and Thomas DM (2009). Wnt inhibitory factor 1 is epigenetically silenced in human osteosarcoma, and targeted disruption accelerates osteosarcomagenesis in mice. *J Clin Invest* 119:837-851

Kara IO, Sahin B, Gunesacar R and Unsal C (2006). Clinical significance of hepatocyte growth factor, platelet-derived growth factor-AB, and transforming growth factor-alpha in bone marrow and peripheral blood of patients with multiple myeloma. *Adv Ther* 23:635-45

Karsdal MA, Byrjalsen I, Riis BJ and Christiansen C (2008). Investigation of the diurnal variation in bone resorption for optimal drug delivery and efficacy in osteoporosis with oral calcitonin. *BMC Clin Pharmacol* 8:12-20

REFERENCE LIST

Kasten P, Vogel J, Luginbuhl R, Niemeyer P, Weiss S, Schneider S, Kramer M, Leo A and Richter W (2006). Influence of platelet-rich plasma on osteogenic differentiation of mesenchymal stem cells and ectopic bone formation in calcium phosphate ceramics. *Cells Tissues Organs* 183:68-79

Katagiri T, Yamaguchi A, Komaki M, Abe E, Takahashi N, Ikeda T, Rosen V, Wozney JM, Fujisawa-Sehara A and Suda T (1994). Bone morphogenetic protein-2 converts the differentiation pathway of C2C12 myoblasts into the osteoblast lineage. *J Cell Biol* 127:1755-66

Katoh Y and Katoh M (2005). Comparative genomics on Dkk1 orthologs. *Int J Oncol* 27:275-9

Kawai M, Maruyama H, Bessho K, Yamamoto H, Miyazaki J and Yamamoto T (2009). Simple strategy for bone regeneration with a BMP-2/7 gene expression cassette vector. *Biochem Biophys Res Commun* 390:1012-7

Kawano Y and Kypta R (2003). Secreted antagonists of the Wnt signalling pathway. *J Cell Sci* 116:2627-2634

Kawasaki A, Torii K, Yamashita Y, Nishizawa K, Kanekura K, Katada M, Ito M, Nishimoto I, Terashita K, Aiso S and Matsuoka M (2007). Wnt5a promotes adhesion of human dermal fibroblasts by triggering a phosphatidylinositol-3 kinase/Akt signal. *Cell Signal* 19:2498-506

Keller H and Kneissel M (2005). SOST is a target gene for PTH in bone. *Bone* 37:148-58

Khosla S, Melton LJ, III, Wermers RA, Crowson CS, O'Fallon W and Riggs B (1999). Primary hyperparathyroidism and the risk of fracture: a population-based study. *J Bone Miner Res* 14:1700-1707

Kim SE and Choi KY (2007). EGF receptor is involved in WNT3a-mediated proliferation and motility of NIH3T3 cells via ERK pathway activation. *Cell Sig* 19:1554-1564

Kinder M, Chislock E, Bussard KM, Shuman L and Mastro AM (2008). Metastatic breast cancer induces an osteoblast inflammatory response. *Exp Cell Res* 314:173-183

REFERENCE LIST

- Kirikoshi H, Inoue S, Sekihara H and Katoh M (2001). Expression of WNT10A in human cancer. *Int J Oncol* 19:997-1001
- Kitazawa S, Kajimoto K, Kondo T and Kitazawa R (2003). Vitamin D3 supports osteoclastogenesis via functional vitamin D response element of human RANKL gene promoter. *J Cell Biochem* 89:771-7
- Knobloch J, Shaughnessy JD Jr and Rüther U (2007). Thalidomide induces limb deformities by perturbing the Bmp/Dkk1/Wnt signalling pathway. *FASEB J* 21:1410-21
- Knudsen S, Harslof T, Husted LB, Carstens M, Stenkjaer L and Langdahl BL (2007). The effect of interleukin-1alpha polymorphisms on bone mineral density and the risk of vertebral fractures. *Calcif Tissue Int* 80:21-30
- Kobayashi K, Takahashi N, Jimi E, Udagawa N, Takami M, Kotake S, Nakagawa N, Kinosaki M, Yamaguchi K, Shima N, Yasuda H, Morinaga T, Higashio K, Martin TJ and Suda T (2000). Tumor necrosis factor alpha stimulates osteoclast differentiation by a mechanism independent of the ODF/RANKL-RANK interaction. *J Exp Med* 191:275-286
- Kobayashi Y, Bridle KR, Ramm GA, O'Neill R, Britton RS and Bacon BR (2007). Effect of phorbol ester and platelet-derived growth factor on protein kinase C in rat hepatic stellate cells. *Liver Int* 27:1066-1075
- Kocher MS and Kasser JR (2003). Osteopetrosis. *Am J Orthop* 32:222-228
- Kohn AD and Moon RT (2005). Wnt and calcium signaling: beta-catenin-independent pathways. *Cell Calcium* 38:439-46
- Kon T, Cho TJ, Aizawa T, Yamazaki M, Nooh N, Graves D, Gerstenfeld LC and Einhorn TA (2001). Expression of osteoprotegerin, receptor activator of NF-kappaB ligand (osteoprotegerin ligand) and related proinflammatory cytokines during fracture healing. *J Bone Miner Res* 16:1004-1014
- Kondo A and Togari A (2004). Activation of osteoblastic functions by a mediator of pain, bradykinin. *Biochem Pharmacol* 68:1423-31
- Kondo T, Kitazawa R, Maeda S and Kitazawa S (2004). 1 alpha,25 dihydroxyvitamin D3 rapidly regulates the mouse osteoprotegerin gene through dual pathways. *J Bone Miner Res* 19:1411-9

REFERENCE LIST

Kong YY, Feige U, Sarosi I, Bolon B, Tafuri A, Morony S, Capparelli C, Li J, Elliott R, McCabe S, Wong T, Campagnuolo G, Moran E, Bogoch ER, Van G, Nguyen LT, Ohashi PS, Lacey DL, Fish E, Boyle WJ and Penninger JM (1999). Activated T cells regulate bone loss and joint destruction in adjuvant arthritis through osteoprotegerin ligand. *Nature* 402:304-309

Kono SJ, Oshima Y, Hoshi K, Bonewald LF, Oda H, Nakamura K, Kawaguchi H and Tanaka S (2007). Erk pathways negatively regulate matrix mineralization. *Bone* 40:68-74

Kovalenko M, Gazit A, Bohmer A, Rorsman C, Ronnstrand L, Heldin CH, Waltenberger J, Bohmer FD and Levitzki A (1994). Selective platelet-derived growth factor receptor kinase blockers reverse sis-transformation. *Cancer Res* 54:6106-6114

Kratchmarova I, Blagoev B, Haack-Sorensen M, Kassem M and Mann M (2005). Mechanism of divergent growth factor effects in mesenchymal stem cell differentiation. *Science* 308:1472-1477

Kukita A, Chenu C, McManus LM, Mundy GR and Roodman GD (1990). Atypical multinucleated cells form in long-term marrow cultures from patients with Paget's disease. *J Clin Invest* 85:1280-1286

Kuku I, Bayraktar MR, Kaya E, Erkurt MA, Bayraktar N, Cikim K and Aydogdu I (2005). Serum proinflammatory mediators at different periods of therapy in patients with multiple myeloma. *Mediators Inflamm* 3:171-174

Kulkarni NH, Halladay DL, Miles RR, Gilbert LM, Frolik CA, Galvin RJ, Martin TJ, Gillespie MT and Onyia JE (2005). Effects of parathyroid hormone on Wnt signalling in bone. *J Cell Biochem* 95:1178-90

Kurihara N, Hiruma Y, Zhou H, Subler MA, Dempster DW, Singer FR, Reddy SV, Gruber HE, Windle JJ and Roodman GD (2007). Mutation of the sequestosome 1 (p62) gene increases osteoclastogenesis but does not induce Paget disease. *J Clin Invest* 117:133-142

Kurihara N, Zhou H, Reddy SV, Garcia PV, Subler MA, Dempster DW, Windle JJ and Roodman GD (2006). Expression of measles virus nucleocapsid protein in osteoclasts induces Paget's disease-like bone lesions in mice. *J Bone Miner Res* 21:446-455

REFERENCE LIST

Kwan Tat S, Amiable N, Pelletier JP, Boileau C, Lajeunesse D, Duval N and Martel-Pelletier J (2009). Modulation of OPG, RANK and RANKL by human chondrocytes and their implication during osteoarthritis. *Rheumatology (Oxford)* 48:1482-90

Kwan TS, Padrines M, Theoleyre S, Heymann D and Fortun Y (2004). IL-6, RANKL, TNF-alpha/IL-1: interrelations in bone resorption pathophysiology. *Cytokine Growth Factor Rev* 15:49-60

Kwan Tat S, Pelletier JP, Lajeunesse D, Fahmi H, Lavigne M and Martel-Pelletier J (2008). The differential expression of osteoprotegerin (OPG) and receptor activator of nuclear factor kappaB ligand (RANKL) in human osteoarthritic subchondral bone osteoblasts is an indicator of the metabolic state of these disease cells. *Clin Exp Rheumatol* 26:295-304

Laan RF, van Riel PL, van de Putte LB, van Erning LJ, van't Hof MA and Lemmens JA (1993). Low-dose prednisone induces rapid reversible axial bone loss in patients with rheumatoid arthritis. A randomized, controlled study. *An Int Med* 119:963-968

Lambert C, Oury C, Dejardin E, Chariot A, Piette J, Malaise M, Merville MP and Franchimont N (2007). Further Insights in the Mechanisms of Interleukin-1beta Stimulation of Osteoprotegerin in Osteoblast-Like Cells. *J Bone Miner Res* 22:1350-61

Langston AL, Campbell MK, Fraser WD, MacLennan GS, Selby PL and Ralston SH (2010). Randomized trial of intensive bisphosphonate treatment versus symptomatic management in Paget's disease of bone. *J Bone Miner Res* 25:20-31

Langston AL and Ralston SH (2004). Management of Paget's disease of bone. *Rheumatology (Oxford)* 43:955-959

Lawrie A, Waterman E, Southwood M, Evans D, Suntharalingam J, Francis S, Crossman D, Croucher P, Morrell N and Newman C (2008). Evidence of a role for osteoprotegerin in the pathogenesis of pulmonary arterial hypertension. *Am J Pathol* 172:256-64

Layfield R, Alban A, Mayer RJ and Lowe J (2001). The ubiquitin protein catabolic disorders. *Neuropathol Appl Neurobiol* 27:171-179

Lee N, Smolarz AJ, Olson S, David O, Reiser J, Kutner R, Daw NC, Prockop DJ, Horwitz EM and Gregory CA (2007). A potential role for Dkk-1 in the pathogenesis

REFERENCE LIST

of osteosarcoma predicts novel diagnostic and treatment strategies. *Br J Cancer* 97:1552-1559

Lee SK and Lorenzo JA (1999). Parathyroid hormone stimulates TRANCE and inhibits osteoprotegerin messenger ribonucleic acid expression in murine bone marrow cultures: correlation with osteoclast-like cell formation. *Endocrinology* 140:3552-61

Lerner UH, Jones IL and Gustafson GT (1987). Bradykinin, a new potential mediator of inflammation-induced bone resorption. Studies of the effects on mouse calvarial bones and articular cartilage in vitro. *Arthritis Rheum* 30:530-40

Li F, Chong ZZ and Maiese K (2005). Vital elements of the Wnt-Frizzled signaling pathway in the nervous system. *Curr Neurovasc Res* 2:331-340

Li J, Sarosi I, Cattle RC, Pretorius J, Asuncion F, Grisanti M, Morony S, Adamu S, Geng Z, Qiu W, Kostenuik P, Lacey DL, Simonet WS, Bolon B, Qian X, Shalhoub V, Ominsky MS, Zhu Ke H, Li X and Richards WG (2006). Dkk1-mediated inhibition of Wnt signaling in bone results in osteopenia. *Bone* 39:754-66

Li J, Sarosi I, Yan XQ, Morony S, Capparelli C, Tan HL, McCabe S, Elliott R, Scully S, Van G, Kaufman S, Juan SC, Sun Y, Tarpley J, Martin L, Christensen K, McCabe J, Kostenuik P, Hsu H, Fletcher F, Dunstan CR, Lacey DL and Boyle WJ (2000). RANK is the intrinsic hematopoietic cell surface receptor that controls osteoclastogenesis and regulation of bone mass and calcium metabolism. *Proc Natl Acad Sci U S A* 97:1566-1571

Li X, Liu H, Qin L, Tamasi J, Bergenstock M, Shapses S, Feyen JH, Notterman DA and Partridge NC (2007). Determination of dual effects of parathyroid hormone on skeletal gene expression in vivo by microarray and network analysis. *J Biol Chem* 282:33086-97

Li X, Ominsky MS, Warmington KS, Morony S, Gong J, Cao J, Gao Y, Shalhoub V, Tipton B, Haldankar R, Chen Q, Winters A, Boone T, Geng Z, Niu QT, Ke HZ, Kostenuik PJ, Simonet WS, Lacey DL and Paszty C (2009). Sclerostin antibody treatment increases bone formation, bone mass, and bone strength in a rat model of postmenopausal osteoporosis. *J Bone Miner Res* 24:578-588

REFERENCE LIST

- Li X, Zhang Y, Kang H, Liu W, Liu P, Zhang J, Harris SE and Wu D (2005). Sclerostin binds to LRP5/6 and antagonizes canonical Wnt signaling. *J Biol Chem* 280:19883-19887
- Li Z, Kong K and Qi W (2006). Osteoclast and its roles in calcium metabolism and bone development and remodeling. *Biochem Biophys Res Commun* 343:345-350
- Lin C, Jiang X, Dai Z, Guo X, Weng T, Wang J, Li Y, Feng G, Gao X and He L (2009). Sclerostin Mediates Bone Response to Mechanical Unloading via Antagonizing Wnt/beta-Catenin Signaling. *J Bone Miner Res* 24:1651-1661
- Ling JQ and Li JP (2004). Insulin-like growth factor-II and basic fibroblast growth factor affect periodontal ligament cells expressing osteoprotegerin in vitro. *Hua Xi Kou Qiang Yi Xue Za Zhi* 22:366-9
- Linkhart TA and MacCharles DC (1992). Interleukin-1 stimulates release of insulin-like growth factor-I from neonatal mouse calvaria by a prostaglandin synthesis-dependent mechanism. *Endocrinology* 131:2297-305
- Livak KJ and Schmittgen TD (2001). Analysis of relative gene expression data using real-time quantitative PCR and the 2(-Delta Delta C(T)) Method. *Methods* 25:402-408
- Lobov IB, Rao S, Carroll TJ, Vallance JE, Ito M, Ondr JK, Kurup S, Glass DA, Patel MS, Shu W, Morrissey EE, McMahon AP, Karsenty G and Lang RA (2005). WNT7b mediates macrophage-induced programmed cell death in patterning of the vasculature. *Nature* 437:417-21
- Locke M (2004). Structure of long bones in mammals. *J Morphol* 262:546-565
- Longo KA, Kennell JA, Ochocinska MJ, Ross SE, Wright WS and MacDougald OA (2002). Wnt signalling protects 3T3-L1 preadipocytes from apoptosis through induction of insulin-like growth factors. *J Biol Chem* 277:38239-44
- Loots GG, Kneissel M, Keller H, Baptist M, Chang J, Collette NM, Ovcharenko D, Plajzer-Frick I and Rubin EM (2005). Genomic deletion of a long-range bone enhancer misregulates sclerostin in Van Buchem disease. *Genome Res* 15:928-935
- Loughlin J, Dowling B, Chapman K, Marcelline L, Mustafa Z, Southam L, Ferreira A, Ciesielski C, Carson DA and Corr M (2004). Functional variants within the secreted

REFERENCE LIST

frizzled-related protein 3 gene are associated with hip osteoarthritis in females. *Proc Natl Acad Sci U S A* 101:9757-9762

Loza JC, Carpio LC, Bradford PG and Dziak R (1999). Molecular characterization of the alpha1 subunit of the L type voltage calcium channel expressed in rat calvarial osteoblasts. *J Bone Miner Res* 14:386-95

Lyons JP, Mueller UW, Ji H, Everett C, Fang X, Hsieh JC, Barth AM and McCrea PD (2004). Wnt-4 activates the canonical beta-catenin-mediated Wnt pathway and binds Frizzled-6 CRD: functional implications of Wnt/beta-catenin activity in kidney epithelial cells. *Exp Cell Res* 298:369-87

Ma L and Wang HY (2007). Mitogen-activated protein kinase p38 regulates the Wnt/cyclic GMP/Ca²⁺ non-canonical pathway. *J Biol Chem.* 282:28980-90

MacDonald BT, Joiner DM, Oyserman SM, Sharma P, Goldstein SA, He X and Hauschka PV (2007). Bone mass is inversely proportional to Dkk1 levels in mice. *Bone* 41:331-339

MacLeod RJ, Hayes M and Pacheco I (2007). Wnt5a secretion stimulated by the extracellular calcium-sensing receptor inhibits defective Wnt signaling in colon cancer cells. *Am J Physiol Gastrointest Liver Physiol* 293:G403-11

Mak W, Shao X, Dunstan CR, Seibel MJ and Zhou H (2009). Biphasic glucocorticoid-dependent regulation of Wnt expression and its inhibitors in mature osteoblastic cells. *Calcif Tissue Int* 85:538-45

Mandal D, Srivastava A, Mahlum E, Desai D, Maran A, Yaszemski M, Jalal SM, Gitelis S, Bertoni F, Damron T, Irwin R, O'Connor M, Schwartz H, Bolander ME and Sarkar G (2007). Severe suppression of Frzb/sFRP3 transcription in osteogenic sarcoma. *Gene* 386:131-138

Mangham DC, Davie MW and Grimer RJ (2009). Sarcoma arising in Paget's disease of bone: declining incidence and increasing age at presentation. *Bone* 44:431-436

Mao B and Niehrs C (2003). Kremen2 modulates Dickkopf2 activity during Wnt/LRP6 signaling. *Gene* 302:179-83

Mao B, Wu W, Li Y, Hoppe D, Stannek P, Glinka A and Niehrs C (2001). LDL-receptor-related protein 6 is a receptor for Dickkopf proteins. *Nature* 411:321-5

REFERENCE LIST

Marom R, Shur I, Solomon R and Benayahu D (2005). Characterization of adhesion and differentiation markers of osteogenic marrow stromal cells. *J Cell Physiol* 202:41-48

Marshall MJ, Evans SF, Sharp CA, Powell DE, McCarthy HS and Davie MW (2009). Increased circulating Dickkopf-1 in Paget's disease of bone. *Clin Biochem* 42:965-969

Martinez G, Wijesinghe M, Turner K, Abud HE, Taketo MM, Noda T, Robinson ML and de Longh RU (2009). Conditional mutations of beta-catenin and APC reveal roles for canonical Wnt signaling in lens differentiation. *Invest Ophthalmol Vis Sci* 50:4794-806

Matthews BG, Afzal MA, Minor PD, Bava U, Callon KE, Pitto RP, Cundy T, Cornish J, Reid IR and Naot D (2008). Failure to detect measles virus ribonucleic acid in bone cells from patients with Paget's disease. *J Clin Endocrinol Metab* 93:1398-1401

Matthews BG, Naot D, Bava U, Callon KE, Pitto RP, McCowan SA, Wattie D, Cundy T, Cornish J and Reid IR (2009). Absence of somatic SQSTM1 mutations in Paget's disease of bone. *J Clin Endocrinol Metab* 94:691-694

Matushansky I, Hernando E, Socci ND, Mills JE, Matos TA, Edgar MA, Singer S, Maki RG and Cordon-Cardo C (2007). Derivation of sarcomas from mesenchymal stem cells via inactivation of the Wnt pathway. *J Clin Invest* 117:3248-3257

Mbalaviele G, Sheikh S, Stains JP, Salazar VS, Cheng SL, Chen D and Civitelli R (2005). Beta-catenin and BMP-2 synergize to promote osteoblast differentiation and new bone formation. *J Cell Biochem* 94:403-18

McCarthy HS and Marshall MJ (2010). Dickkopf-1 as a potential therapeutic target in Paget's disease of bone. *Expert Opin Ther Targets* 14:221-30

McCarthy HS, Williams JHH, Davie MWJ and Marshall MJ (2009). Platelet-derived growth factor stimulates osteoprotegerin production in osteoblastic cells. *J Cell Physiol* 218:350-4

McCarthy TL and Centrella M (2010). Novel Links among Wnt and TGF- β Signaling and Runx2. *Mol Endocrinol* 24:587-97

REFERENCE LIST

McDonnell P, McHugh PE and O'Mahoney D (2007). Vertebral osteoporosis and trabecular bone quality. *An Biomed Eng* 35:170-189

McGonigle JS, Tae G, Stayton PS, Hoffman AS and Scatena M (2008). Heparin-regulated delivery of osteoprotegerin promotes vascularization of implanted hydrogels. *J Biomater Sci Polym Ed* 19:1021-1034

Menea C, Reddy SV, Kurihara N, Maeda H, Anderson D, Cundy T, Cornish J, Singer FR, Bruder JM and Roodman GD (2000). Enhanced RANK ligand expression and responsivity of bone marrow cells in Paget's disease of bone. *J Clin Invest* 105:1833-1838

Merlotti D, Gennari L, Martini G, Valleggi F, De Paola V, Avanzati A and Nuti R (2007). Comparison of different intravenous bisphosphonate regimens for Paget's disease of bone. *J Bone Miner Res* 22:1510-1517

Miao D, Li J, Xue Y, Su H, Karaplis AC and Goltzman D (2004). Parathyroid hormone-related peptide is required for increased trabecular bone volume in parathyroid hormone-null mice. *Endocrinology* 145:3554-3562

Middleton-Hardie C, Zhu Q, Cundy H, Lin JM, Callon K, Tong PC, Xu J, Grey A, Cornish J and Naot D (2006). Deletion of aspartate 182 in OPG causes juvenile Paget's disease by impairing both protein secretion and binding to RANKL. *J Bone Miner Res* 21:438-445

Miller SC and Bowman BM (2007). Rapid inactivation and apoptosis of osteoclasts in the maternal skeleton during the bone remodeling reversal at the end of lactation. *Anat Rec (Hoboken)* 290:65-73

Mills BG, Yabe H and Singer FR (1988). Osteoclasts in human osteopetrosis contain viral-nucleocapsid-like nuclear inclusions. *J Bone Miner Res* 3:101-106

Morvan F, Boulukos K, Clement-Lacroix P, Roman RS, Suc-Royer I, Vayssiere B, Ammann P, Martin P, Pinho S, Pognonec P, Mollat P, Niehrs C, Baron R and Rawadi G (2006). Deletion of a single allele of the *Dkk1* gene leads to an increase in bone formation and bone mass. *J Bone Miner Res* 21:934-945

Mukhopadhyay M, Shtrom S, Rodriguez-Esteban C, Chen L, Tsukui T, Gomer L, Dorward DW, Glinka A, Grinberg A, Huang SP, Niehrs C, Belmonte JC and

REFERENCE LIST

Westphal H (2001). Dickkopf1 is required for embryonic head induction and limb morphogenesis in the mouse. *Dev Cell* 1:423-434

Murakami T, Yamamoto M, Ono K, Nishikawa M, Nagata N, Motoyoshi K and Akatsu T (1998). Transforming growth factor-beta1 increases mRNA levels of osteoclastogenesis inhibitory factor in osteoblastic/stromal cells and inhibits the survival of murine osteoclast-like cells. *Biochem Biophys Res Commun* 252:747-52

Myeloma Risks and Causes (June 2010). Retrieved from <http://www.cancerhelp.org.uk/type/myeloma/about/myeloma-risks-and-causes>

Nakamura T, Nawa K and Ichihara A (1984). Partial purification and characterization of hepatocyte growth factor from serum of hepatectomized rats. *Biochem Biophys Res Commun* 122:1450-9

Nakamura Y, Nawata M and Wakitani S (2005). Expression profiles and functional analyses of Wnt-related genes in human joint disorders. *Am J Pathol* 167:97-105

Nakanishi R, Akiyama H, Kimura H, Otsuki B, Shimizu M, Tsuboyama T and Nakamura T (2008). Osteoblast-targeted expression of Sfrp4 in mice results in low bone mass. *J Bone Miner Res* 23:271-277

Nakashima A, Katagiri T and Tamura M (2005). Cross-talk between Wnt and bone morphogenetic protein 2 (BMP-2) signaling in differentiation pathway of C2C12 myoblasts. *J Biol Chem* 280:37660-37668

Nakashima T, Kobayashi Y, Yamasaki S, Kawakami A, Eguchi K, Sasaki H and Sakai H (2000). Protein expression and functional difference of membrane-bound and soluble receptor activator of NF-kappaB ligand: modulation of the expression by osteotropic factors and cytokines. *Biochem Biophys Res Commun* 275:768-75

Nakatsuka K, Nishizawa Y and Ralston SH (2003). Phenotypic characterization of early onset Paget's disease of bone caused by a 27-bp duplication in the TNFRSF11A gene. *J Bone Miner Res* 18:1381-1385

Naot D, Bava U, Matthews B, Callon KE, Gamble GD, Black M, Song S, Pitto RP, Cundy T, Cornish J and Reid IR (2007). Differential gene expression in cultured osteoblasts and bone marrow stromal cells from patients with Paget's disease of bone. *J Bone Miner Res* 22:298-309

REFERENCE LIST

Narita T, Sasaoka S, Udagawa K, Ohya T, Wada N, Nishimatsu S, Takada S and Nohno T (2005). Wnt10a is involved in AER formation during chick limb development. *Dev Dyn* 233:282-7

Naumann M, Bech-Otschir D, Huang X, Ferrell K and Dubiel W (1999). COP9 signalosome-directed c-Jun activation/stabilization is independent of JNK. *J Biol Chem* 274:35297-300

Neale SD, Schulze E, Smith R and Athanasou NA (2002). The influence of serum cytokines and growth factors on osteoclast formation in Paget's disease. *QJM* 95:233-240

Nemeth MJ, Mak KK, Yang Y and Bodine DM (2009). beta-Catenin expression in the bone marrow microenvironment is required for long-term maintenance of primitive hematopoietic cells. *Stem Cells* 27:1109-19

Nguyen AN, Stebbins EG, Henson M, O'Young G, Choi SJ, Quon D, Damm D, Reddy M, Ma JY, Haghazari E, Kapoun AM, Medicherla S, Protter A, Schreiner GF, Kurihara N, Anderson J, Roodman GD, Navas TA and Higgins LS (2006). Normalizing the bone marrow microenvironment with p38 inhibitor reduces multiple myeloma cell proliferation and adhesion and suppresses osteoclast formation. *Exp Cell Res* 312:1909-23

Niu T and Rosen CJ (2005). The insulin-like growth factor-I gene and osteoporosis: a critical appraisal. *Gene* 361:38-56

Noble BS and Reeve J (2000). Osteocyte function, osteocyte death and bone fracture resistance. *Mol Cell Endocrin* 159:7-13

Nussey SS and Whitehead SA (2001). Endocrinology: An integrated approach. *BIOS Scientific Publishers* chapter 5.

O'Brien EA, Williams JH and Marshall MJ (2001). Osteoprotegerin is produced when prostaglandin synthesis is inhibited causing osteoclasts to detach from the surface of mouse parietal bone and attach to the endocranial membrane. *Bone* 28:208-214

Odgren PR, Kim N, MacKay CA, Mason-Savas A, Choi Y and Marks SC, Jr (2003). The role of RANKL (TRANCE/TNFSF11), a tumor necrosis factor family member, in

REFERENCE LIST

skeletal development: effects of gene knockout and transgenic rescue. *Connect Tissue Res* 44:264-71

Ogawa Y, Schmidt DK, Nathan RM, Armstrong RM, Miller KL, Sawamura SJ, Ziman JM, Erickson KL, de Leon ER, Rosen DM, et al (1992). Bovine bone activin enhances bone morphogenetic protein-induced ectopic bone formation. *J Biol Chem* 267:14233-7

Ohnaka K, Taniguchi H, Kawate H, Nawata H and Takayanagi R (2004). Glucocorticoid enhances the expression of dickkopf-1 in human osteoblasts: novel mechanism of glucocorticoid-induced osteoporosis. *Biochem Biophys Res Commun* 318:259-264

Ornitz DM and Marie PJ (2002). FGF signaling pathways in endochondral and intramembranous bone development and human genetic disease. *Genes Dev* 16:1446-1465

Orwoll E and Meier D (1986). Alterations in calcium, vitamin D and parathyroid hormone physiology in normal men with aging: relationship to the development of senile osteopenia. *J Clin Endocrinol Metab* 63:1262–1269

Osada M, Park HL, Nagakawa Y, Begum S, Yamashita K, Wu G, Kim MS, Trink B and Sidransky D (2006). A novel response element confers p63- and p73-specific activation of the WNT4 promoter. *Biochem Biophys Res Commun* 339:1120-8

Osafune K, Takasato M, Kispert A, Asashima M and Nishinakamura R (2006). Identification of multipotent progenitors in the embryonic mouse kidney by a novel colony-forming assay. *Development* 133:151-61

Oshima T, Abe M, Asano J, Hara T, Kitazoe K, Sekimoto E, Tanaka Y, Shibata H, Hashimoto T, Ozaki S, Kido S, Inoue D and Matsumoto T (2005). Myeloma cells suppress bone formation by secreting a soluble Wnt inhibitor, sFRP-2. *Blood* 106:3160-3165

Osteoporosis Facts and Figures (Feb 2006). Retrieved from <http://www.nos.org.uk/NetCommunity/admin/Document.Doc?id=47>

Pacheco II and Macleod RJ (2008). CaSR stimulates secretion of Wnt5a from colonic myofibroblasts to stimulate CDX2 and sucrase-isomaltase using Ror2 on intestinal epithelia. *Am J Physiol Gastrointest Liver Physiol* 295:G748-59

REFERENCE LIST

- Pacifici R, Rifas L, McCracken R, Vered I, McMurtry C, Avioli LV and Peck WA (1989). Ovarian steroid treatment blocks a postmenopausal increase in blood monocyte interleukin 1 release. *Proc Natl Acad Sci U S A* 86:2398-2402
- Pandur P, Läsche M, Eisenberg LM and Kühl M (2002). Wnt-11 activation of a non-canonical Wnt signalling pathway is required for cardiogenesis. *Nature* 418:636-41
- Papanicolaou SE, Phipps RJ, Fyhrie DP and Genetos DC (2009). Modulation of sclerostin expression by mechanical loading and bone morphogenetic proteins in osteogenic cells. *Biorheology* 46:389-99
- Parfitt AM (1994). Osteonal and hemi-osteonal remodeling: the spatial and temporal framework for signal traffic in adult human bone. *J Cell Biochem* 55:273-286
- Parfitt AM, (2005). Bone structure and remodelling in Paget's disease – qualitative and quantitative abnormalities in osteoblast function. *Calcif Tissue Int* 76: 475–476
- Park CH, Hahm ER, Lee JH, Jung KC, Rhee HS and Yang CH (2005). Ionomycin downregulates beta-catenin/Tcf signaling in colon cancer cell line. *Carcinogenesis* 26:1929-33
- Pautke C, Schieker M, Tischer T, Kolk A, Neth P, Mutschler W and Milz S (2004). Characterisation of osteosarcoma cell lines, MG-63, Saos-2 and U-2 OS in comparison to human osteoblasts. *Anticancer Res* 24:3743-3748
- Pennisi P, Trombetti A and Rizzoli R (2006). Glucocorticoid-induced osteoporosis and its treatment. *Clin Orthop Relat Res* 443:39-47
- Pilichou A, Papassotiriou I, Michalakakou K, Fessatou S, Fandridris E, Papachristou G and Terpos E (2008). High levels of synovial fluid osteoprotegerin (OPG) and increased serum ration of receptor activator of nuclear factor-kB ligand (RANKL) to OPG correlate with disease severity in patients with primary knee osteoarthritis. *Clin Biochem* 41:746-749
- Pogrel MA (2003). Calcitonin therapy for central giant cell granuloma. *J Oral Maxillofac Surg* 61:649-53
- Politou MC, Heath DJ, Rahemtulla A, Szydlo R, Anagnostopoulos A, Dimopoulos MA, Croucher PI and Terpos E (2006). Serum concentrations of Dickkopf-1 protein are increased in patients with multiple myeloma and reduced after autologous stem cell transplantation. *Int J Cancer* 119:1728-1731

REFERENCE LIST

- Polyzos SA, Anastasilakis AD, Efstathiadou Z, Kita M, Litsas I, Avramidis A, Arsos G, Moralidis E, Gerou S, Pavlidou V, Papatheodorou A and Terpos E (2009). The Effect of Zoledronic Acid on Serum Dickkopf-1, Osteoprotegerin, and RANKL in Patients with Paget's Disease of Bone. *Horm.Metab Res* 41:846-50
- Pötter E, Bergwitz C and Brabant G (1999). The cadherin-catenin system: implications for growth and differentiation of endocrine tissues. *Endocr Rev* 20:207-39
- Qiang YW, Chen Y, Stephens O, Brown N, Chen B, Epstein J, Barlogie B and Shaughnessy JD, Jr (2008). Myeloma-derived Dickkopf-1 disrupts Wnt-regulated osteoprotegerin and RANKL production by osteoblasts: a potential mechanism underlying osteolytic bone lesions in multiple myeloma. *Blood* 112:196-207
- Qiang YW, Hu B, Chen Y, Zhong Y, Shi B, Barlogie B and Shaughnessy JD Jr (2009). Bortezomib induces osteoblast differentiation via Wnt-independent activation of beta-catenin/TCF signaling. *Blood* 113:4319-30
- Quinn JM and Gillespie MT (2005). Modulation of osteoclast formation. *Biochem Biophys Res Commun* 328:739-745
- Rea SL, Walsh JP, Ward L, Magno AL, Ward BK, Shaw B, Layfield R, Kent GN, Xu J and Ratajczak T (2009). Sequestosome 1 mutations in Paget's disease of bone in Australia: prevalence, genotype/phenotype correlation, and a novel non-UBA domain mutation (P364S) associated with increased NF-kappaB signaling without loss of ubiquitin binding. *J Bone Miner Res* 24:1216-1223
- Recker RR (1992). Embryology, anatomy, and microstructure of bone. In: Coe FL and Favus MJ Editors. *Disorders of Bone and Mineral Metabolism*, Raven Press, New York, 219–240.
- Regoli D and Barabé J (1980). Pharmacology of bradykinin and related kinins. *Pharmacol Rev* 32:1-46
- Reid IR, Nicholson GC, Weinstein RS, Hosking DJ, Cundy T, Kotowicz MA, Murphy WA, Jr., Yeap S, Dufresne S, Lombardi A, Musliner TA, Thompson DE and Yates AJ (1996). Biochemical and radiologic improvement in Paget's disease of bone treated with alendronate: a randomized, placebo-controlled trial. *Am J Med* 101:341-348

REFERENCE LIST

- Ricupero D, Taylor L, Tlucko A, Navarro J and Polgar P (1992). Mechanisms in bradykinin stimulated arachidonate release and synthesis of prostaglandin and platelet activating factor. *Mediators Inflamm* 1:133-40
- Ristiniemi J, Flinkkilä T, Hyvönen P, Lakovaara M, Pakarinen H and Jalovaara P (2007). RhBMP-7 accelerates the healing in distal tibial fractures treated by external fixation. *J Bone Joint Surg Br* 89:265-72
- Roato I, D'Amelio P, Gorassini E, Grimaldi A, Bonello L, Fiori C, Delsedime L, Tizzani A, De Libero A, Isaia G and Ferracini R (2008). Osteoclasts are active in bone forming metastases of prostate cancer patients. *PLoS One* 3:e3627
- Robling AG, Niziolek PJ, Baldrige LA, Condon KW, Allen MR, Alam I, Mantila SM, Gluhak-Heinrich J, Bellido TM, Harris SE and Turner CH (2008). Mechanical stimulation of bone in vivo reduces osteocyte expression of Sost/sclerostin. *J Biol Chem* 283:5866-5875
- Roelen BA and Dijke (2003). Controlling mesenchymal stem cell differentiation by TGFβ family members. *J Orthop Sci* 8:740-8
- Rogers MJ (2004). From molds and macrophages to mevalonate: a decade of progress in understanding the molecular mode of action of bisphosphonates. *Calcif Tissue Int* 75:451-461
- Rojas J, Daroszewska A, Helfrich M, Layfield R, van 't Hof R and Ralston S (2007). Mice with a truncation mutation affecting SQSTM1 exhibit several phenotypic features in common with Paget's disease of bone. *Calcif Tiss Int* 81:145-51
- Roodman GD, Kurihara N, Ohsaki Y, Kukita A, Hosking D, Demulder A, Smith JF and Singer FR (1992). Interleukin 6. A potential autocrine/paracrine factor in Paget's disease of bone. *J Clin Invest* 89:46-52
- Ruza E, Sierrasesumaga L, Azcona C and Patino-Garcia A (2006). Bone mineral density and bone metabolism in children treated for bone sarcomas. *Pediatr Res* 59:866-871
- Ryoo H, Lee M and Kim Y (2006). Critical molecular switches involved in BMP-2-induced osteogenic differentiation of mesenchymal stem cells. *Gene* 366:51-57

REFERENCE LIST

Sakai R, Fujita S, Horie T, Ohyama T, Miwa K, Maki T, Okimoto N, Nakamura T and Eto Y (2000). Activin increases bone mass and mechanical strength of lumbar vertebrae in aged ovariectomized rats. *Bone* 27:91-6

Salazar KD, Lankford SM and Brody AR (2009). Mesenchymal stem cells produce Wnt isoforms and TGF-beta1 that mediate proliferation and procollagen expression by lung fibroblasts. *Am J Physiol Lung Cell Mol Physiol* 297:L1002-11

Schäcke H, Docke WD and Asadullah K (2002). Mechanisms involved in the side effects of glucocorticoids. *Pharmacol Ther* 96:23-43

Schoppet M, Sattler AM, Schaefer JR, Herzum M, Maisch B and Hofbauer LC (2003). Increased osteoprotegerin serum levels in men with coronary artery disease. *J Clin Endocrinol Metab* 88:1024-8

Schwartz Z, Olivares-Navarrete R, Wieland M, Cochran DL and Boyan BD (2009). Mechanisms regulating increased production of osteoprotegerin by osteoblasts cultured on microstructured titanium surfaces. *Biomaterials* 30:3390-6

Seibel MJ (2005). Biochemical markers of bone turnover: part I: biochemistry and variability. *Clin Biochem Rev* 26:97-122

Seitz S, Priemel M, Zustin J, Beil FT, Semler J, Minne H, Schinke T and Amling M (2009). Paget's disease of bone: histologic analysis of 754 patients. *J Bone Miner Res* 24:62-69

Sen M, Reifert J, Lauterbach K, Wolf V, Rubin JS, Corr M and Carson DA (2002). Regulation of fibronectin and metalloproteinase expression by Wnt signaling in rheumatoid arthritis synoviocytes. *Arthritis Rheum* 46:2867-77

Sharan K, Siddiqui JA, Swarnkar G and Chattopadhyay N (2008). Role of calcium-sensing receptor in bone biology. *Indian J Med Res* 127:274-86

Shevde NK, Bendixen AC, Dienger KM and Pike JW (2000). Estrogens suppress RANK ligand-induced osteoclast differentiation via a stromal cell independent mechanism involving c-Jun repression. *Proc Natl Acad Sci U S A* 97:7829-7834

Shiozawa Y, Takenouchi H, Taguchi T, Saito M, Katagiri YU, Okita H, Shimizu T, Yamashiro Y, Fujimoto J and Kiyokawa N (2008). Human osteoblasts support hematopoietic cell development in vitro. *Acta Haematol* 120:134-45

REFERENCE LIST

Shou J, Ali-Osman F, Multani AS, Pathak S, Fedi P and Srivenugopal KS (2002). Human Dkk-1, a gene encoding a Wnt antagonist, responds to DNA damage and its overexpression sensitizes brain tumor cells to apoptosis following alkylation damage of DNA. *Oncogene* 21:878-889

Shu W, Jiang YQ, Lu MM and Morrisey EE (2002). Wnt7b regulates mesenchymal proliferation and vascular development in the lung. *Development* 129:4831-42

Simonet WS, Lacey DL, Dunstan CR, Kelley M, Chang MS, Luthy R, Nguyen HQ, Wooden S, Bennett L, Boone T, Shimamoto G, DeRose M, Elliott R, Colombero A, Tan HL, Trail G, Sullivan J, Davy E, Bucay N, Renshaw-Gegg L, Hughes TM, Hill D, Pattison W, Campbell P, Sander S, Van G, Tarpley J, Derby P, Lee R and Boyle WJ (1997). Osteoprotegerin: a novel secreted protein involved in the regulation of bone density. *Cell* 89:309-319

Sims NA, Jenkins BJ, Nakamura A, Quinn JM, Li R, Gillespie MT, Ernst M, Robb L and Martin TJ (2005). Interleukin-11 receptor signaling is required for normal bone remodeling. *J Bone Miner Res* 20:1093-102

Standal T, Abildgaard N, Fagerli UM, Stordal B, Hjertner O, Borset M and Sundan A (2007). HGF inhibits BMP-induced osteoblastogenesis: possible implications for the bone disease of multiple myeloma. *Blood* 109:3024-30

Sun WL, Chen LL, Yan J and Yu ZS (2005). Effects of IGF-II on promoting proliferation and regulating nitric oxide synthase gene expression in mouse osteoblast-like cell. *J Zhejiang Univ Sci B* 6:699-704

Sutherland MK, Geoghegan JC, Yu C, Turcott E, Skonier JE, Winkler DG and Latham JA (2004). Sclerostin promotes the apoptosis of human osteoblastic cells: a novel regulation of bone formation. *Bone* 35:828-835

Suzuki A, Ozono K, Kubota T, Kondoa H, Tachikawa K and Michigami T (2008). PTH/cAMP/PKA signaling facilitates canonical Wnt signaling via inactivation of glycogen synthase kinase-3 β in osteoblastic Saos-2 cells. *J Cell Biochem* 104:304-317

Takami M, Takahashi N, Udagawa N, Miyaura C, Suda K, Woo JT, Martin TJ, Nagai K and Suda T (2000). Intracellular calcium and protein kinase C mediate expression of receptor activator of nuclear factor-kappaB ligand and osteoprotegerin in osteoblasts. *Endocrinology* 141:4711-9

REFERENCE LIST

Tao Q, Yokota C, Puck H, Kofron M, Birsoy B, Yan D, Asashima M, Wylie CC, Lin X and Heasman J (2005). Maternal wnt11 activates the canonical wnt signaling pathway required for axis formation in *Xenopus* embryos. *Cell* 120:857-71

Taylor D and Lee TC (2003). Microdamage and mechanical behaviour: predicting failure and remodelling in compact bone. *J Anat* 203:203-211

Terpos E, Heath DJ, Rahemtulla A, Zervas K, Chantry A, Anagnostopoulos A, Pouli A, Katodritou E, Verrou E, Vervessou EC, Dimopoulos MA and Croucher PI (2006). Bortezomib reduces serum dickkopf-1 and receptor activator of nuclear factor-kappaB ligand concentrations and normalises indices of bone remodelling in patients with relapsed multiple myeloma. *Br J Haematol* 135:688-692

Theman TA and Collins MT (2009). The role of the calcium-sensing receptor in bone biology and pathophysiology. *Curr Pharm Biotechnol* 10:289-301

Thomson BM, Mundy GR and Chambers TJ (1987). Tumor necrosis factors alpha and beta induce osteoblastic cells to stimulate osteoclastic bone resorption. *J Immunol* 138:775-9

Tian E, Zhan F, Walker R, Rasmussen E, Ma Y, Barlogie B and Shaughnessy JD, Jr (2003). The role of the Wnt-signaling antagonist DKK1 in the development of osteolytic lesions in multiple myeloma. *N Engl J Med* 349:2483-2494

Tsuda E, Goto M, Mochizuki S, Yano K, Kobayashi F, Morinaga T and Higashio K (1997). Isolation of a novel cytokine from human fibroblasts that specifically inhibits osteoclastogenesis. *Biochem Biophys Res Commun* 234:137-142

Tsuji K, Cox K, Gamer L, Graf D, Economides A and Rosen V (2010). Conditional deletion of BMP7 from the limb skeleton does not affect bone formation or fracture repair. *J Orthop Res* 28:384-9

Tu X, Joeng KS, Nakayama KI, Nakayama K, Rajogopal J, Carroll TJ, McMahon AP and Long F (2007). Noncanonical Wnt signalling through G protein-linked PKC δ activation promotes bone formation. *Dev Cell* 12:113-127

Tumminello FM, Badalamenti G, Incorvaia L, Fulfarò F, D'Amico C and Leto G (2009). Serum interleukin-6 in patients with metastatic bone disease: correlation with cystatin C. *Med Oncol* 26:10-15

REFERENCE LIST

Ulrich-Vinther M and Andreassen TT (2005). Osteoprotegerin treatment impairs remodeling and apparent material properties of callus tissue without influencing structural fracture strength. *Calcif Tissue Int* 76:280-286

U.S. National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) Program. <http://seer.cancer.gov>

Vaes BL, Dechering KJ, Feijen A, Hendriks JM, Lefevre C, Mummery CL, Olijve W, van Zoelen EJ and Steegenga WT (2002). Comprehensive microarray analysis of bone morphogenetic protein 2-induced osteoblast differentiation resulting in the identification of novel markers for bone development. *J Bone Miner Res* 17:2106-2118

Vainio S, Heikkilä M, Kispert A, Chin N and McMahon AP (1999). Female development in mammals is regulated by Wnt-4 signalling. *Nature* 397:405-9

van der Horst G, van der Werf SM, Farih-Sips H, van Bezooijen RL, Lowik CW and Karperien M (2005). Downregulation of Wnt signaling by increased expression of Dickkopf-1 and -2 is a prerequisite for late-stage osteoblast differentiation of KS483 cells. *J Bone Miner Res* 20:1867-1877

Van Staa TP, Leufkens HG, Abenhaim L, Zhang B and Cooper C (2000). Use of oral corticosteroids and risk of fractures. *J Bone Miner Res* 15:993-1000

Van Staa TP, Selby P, Leufkens HG, Lyles K, Sprafka JM and Cooper C (2002). Incidence and natural history of Paget's disease of bone in England and Wales. *J Bone Miner Res* 17:465-471

Vestergaard P, Rejnmark L and Mosekilde L (2009). Diabetes and its complications and their relationship with risk of fractures in type 1 and 2 diabetes. *Calcif Tissue Int* 84:45-55

Voorzanger-Rousselot N, Goehrig D, Journe F, Doriath V, Body JJ, Clezardin P and Garnero P (2007). Increased Dickkopf-1 expression in breast cancer bone metastases. *Br J Cancer* 97:964-970

Wang HY and Malbon CC (2003). Wnt signaling, Ca²⁺, and cyclic GMP: visualizing Frizzled functions. *Science* 300:1529-1530

Wang J, Shou J and Chen X (2000). Dickkopf-1, an inhibitor of the Wnt signaling pathway, is induced by p53. *Oncogene* 19:1843-1848

REFERENCE LIST

- Wang JC, Hemavathy K, Charles W, Zhang H, Dua PK, Novetsky AD, Chang T, Wong C and Jabara M (2004). Oseteosclerosis in idiopathic myelofibrosis is related to the overproduction of osteoprotegerin (OPG). *Exp Hematol* 32:905-910
- Wang R, Zou Y, Yuan Z, Wang Y, Chen Y, Mao Y, Zhu ZA, Li H, Tang X, Lu J and Yi J (2009). Autografts and xenografts of skin fibroblasts delivering BMP-2 effectively promote orthotopic and ectopic osteogenesis. *Anat Rec (Hoboken)* 292:777-86
- Wang YK, Samos CH, Peoples R, Pérez-Jurado LA, Nusse R and Francke U (1997). A novel human homologue of the *Drosophila* frizzled wnt receptor gene binds wingless protein and is in the Williams syndrome deletion at 7q11.23. *Hum Mol Genet* 6:465-72
- Wang Z, Shu W, Lu MM and Morrisey EE (2005). Wnt7b activates canonical signaling in epithelial and vascular smooth muscle cells through interactions with Fzd1, Fzd10, and LRP5. *Mol Cell Biol* 25:5022-30
- Webb SJ, McPherson JR, Pahan K and Koka S (2002). Regulation of TNF-alpha-induced IL-6 production in MG-63 human osteoblast-like cells. *J Dent Res* 71:18-22
- Weng LH, Wang CJ, Ko JY, Sun YC, Su YS and Wang FS (2009). Inflammation induction of Dickkopf-1 mediates chondrocyte apoptosis in osteoarthritic joint. *Osteoarthritis Cartilage* 17:933-43
- Westendorf JJ, Kahler RA and Schroeder TM (2004). Wnt signaling in osteoblasts and bone diseases. *Gene* 341:19-39
- White AP, Vaccaro AR, Hall JA, Whang PG, Friel BC and McKee MD (2007). Clinical applications of BMP-7/OP-1 in fractures, nonunions and spinal fusion. *Int Orthop* 31:735-41
- Witte F, Dokas J, Neuendorf F, Mundlos S and Stricker S (2009). Comprehensive expression analysis of all Wnt genes and their major secreted antagonists during mouse limb development and cartilage differentiation. *Gene Expr Patterns* 9:215-223
- Wlodarski H and Galus R (2005). Histological aspects of bone fracture healing. *Ortop Traumatol Rehabil* 7:351-360

REFERENCE LIST

Worsfold M, Davie MW and Haddaway MJ (1999). Age-related changes in body composition, hydroxyproline, and creatinine excretion in normal women. *Calcif Tissue Int* 64:40-4

Wright HL, McCarthy HS, Middleton J, Marshall MJ (2009). RANK, RANKL and Osteoprotegerin in bone biology and disease. *Curr Rev Musc Med* 2:56-64

Xiao L, Yuan X and Sharkis SJ (2006). Activin A maintains self-renewal and regulates fibroblast growth factor, Wnt, and bone morphogenic protein pathways in human embryonic stem cells. *Stem Cells* 24:1476-86

Yadav VK, Ryu JH, Suda N, Tanaka KF, Gingrich JA, Schutz G, Glorieux FH, Chiang CY, Zajac JD, Insogna KL, Mann JJ, Hen R, Ducy P and Karsenty G (2008). Lrp5 controls bone formation by inhibiting serotonin synthesis in the duodenum. *Cell* 135:825-837

Yamaguchi K, Kinosaki M, Goto M, Kobayashi F, Tsuda E, Morinaga T and Higashio K (1998). Characterization of structural domains of human osteoclastogenesis inhibitory factor. *J Biol Chem* 273:5117-5123

Yamaguchi T, Chattopadhyay N, Kifor O, Butters RR, Jr., Sugimoto T and Brown EM (1998a). Mouse osteoblastic cell line (MC3T3-E1) expresses extracellular calcium (Ca²⁺)-sensing receptor and its agonists stimulate chemotaxis and proliferation of MC3T3-E1 cells. *J Bone Miner Res* 13:1530-8

Yamaguchi T, Chattopadhyay N, Kifor O, Ye C, Vassilev PM, Sanders JL and Brown EM (2001). Expression of extracellular calcium-sensing receptor in human osteoblastic MG-63 cell line. *Am J Physiol Cell Physiol* 280:C382-93

Yamaguchi T, Kifor O, Chattopadhyay N and Brown EM (1998b). Expression of extracellular calcium (Ca²⁺)-sensing receptor in the clonal osteoblast-like cell lines, UMR-106 and SAOS-2. *Biochem Biophys Res Commun* 243:753-7

Yamaguchi T and Sugimoto T (2007). Impaired bone mineralization in calcium-sensing receptor (CaSR) knockout mice : the physiological action of CaSR in bone microenvironments. *Clin Calcium* 17:1567-73

Yamashiro T, Zheng L, Shitaku Y, Saito M, Tsubakimoto T, Takada K, Takano-Yamamoto T and Thesleff I (2007). Wnt10a regulates dentin sialophosphoprotein

REFERENCE LIST

mRNA expression and possibly links odontoblast differentiation and tooth morphogenesis. *Differentiation* 75:452-62

Yan T, Wunder JS, Gokgoz N, Gill M, Eskandarian S, Parkes RK, Bull SB, Bell RS and Andrulis IL (2007). COPS3 amplification and clinical outcome in osteosarcoma. *Cancer* 109:1870-6

Yavropoulou MP and Yovos JG (2007). The role of the Wnt signaling pathway in osteoblast commitment and differentiation. *Hormones (Athens.)* 6:279-294

Yue W, Sun Q, Dacic S, Landreneau RJ, Siegfried JM, Yu J and Zhang L (2008). Downregulation of Dkk3 activates beta-catenin/TCF-4 signaling in lung cancer. *Carcinogenesis* 29:84-92

Zambonin G, Camerino C, Greco G, Patella V, Moretti B and Grano M (2000). Hydroxyapatite coated with heaptocyte growth factor (HGF) stimulates human osteoblasts in vitro. *J Bone Joint Surg Br* 82:457-60

Zhang Y, Wang Y, Li X, Zhang J, Mao J, Li Z, Zheng J, Li L, Harris S and Wu D (2004). The LRP5 high-bone-mass G171V mutation disrupts LRP5 interaction with Mesd. *Mol Cell Biol* 24:4677-4684

Zhou S, Eid K and Glowacki J (2004). Cooperation between TGF-beta and Wnt pathways during chondrocyte and adipocyte differentiation of human marrow stromal cells. *J Bone Miner Res* 19:463-70

Zhu BD, Ren J, Wang XY, Li X and Nie J (2006). Biological properties of mesenchymal stem cells derived from bone marrow of patients with multiple myeloma. *Zhongguo Shi Yan Xue Ye Xue Za Zhi* 14:1138-42

Zhu W, Kim J, Cheng C, Rawlins BA, Boachie-Adjei O, Crystal RG and Hidaka C (2006). Noggin regulation of bone morphogenetic protein (BMP) 2/7 heterodimer activity in vitro. *Bone* 39:61-71

List of publications, presentations and prizes related to this work

Abstracts / presentations

McCarthy H, Mangham D, Davie M, Marshall M (2010). Increased production of DKK-1 in fibrotic cells and osteoblasts in bone from Paget's disease. *Bone* 46, Suppl 1, (Abstract No 183, S76, International Bone and Mineral Society meeting, March, Davos, Switzerland).

McCarthy HS, Williams JHH, Davie MWJ and Marshall MJ (2009). Calcium-induced secretion of DKK-1 in osteoblastic cells. (Oral poster presentation, Abstract No P053, Bone Research Society meeting, June, London).

McCarthy HS, Williams JHH, Davie MWJ and Marshall MJ (2009). Dickkopf-1 in serum of patients with Paget's disease of bone. *Bone Suppl* 2 (Abstract No P071, S279, European Calcified Tissue Society meeting, May, Vienna).

McCarthy HS, Williams JHH, Davie MWJ and Marshall MJ (2008). Platelet-derived growth factor stimulates osteoprotegerin production in osteoblastic cells. *Calcif Tissue Int* 83:1-33 (Abstract No BRS-P43, page 28, Bone Research Society meeting, June, Manchester).

McCarthy HS, Williams JHH, Davie MWJ and Marshall MJ (2008). The role of Dkk-1 in human osteosarcoma and its regulation. *Bone* 42 Suppl 1 (Abstract No 99, S62, International Bone and Mineral Society meeting, March, Davos, Switzerland).

McCarthy HS, Smith HL, Davie MWJ and Marshall MJ (2007). Osteoprotegerin production by MG63 but not by Saos-2 osteosarcoma cells is stimulated by a factor present in serum. *Calcif Tissue Int* 80 Suppl 1 (Abstract No P172-S, S83, European Calcified Tissue Society meeting, May, Copenhagen).

Publications

McCarthy HS and Marshall MJ (2010). Dickkopf-1 as a therapeutic target in Paget's disease of bone. *Expert Opin Ther Targets* 14:221-30

Marshall MJ, Evans SF, Sharp CA, Powell DE, McCarthy HS and Davie MW (2009). Increased circulating Dickkopf-1 in Paget's disease of bone. *Clin Biochem* 42:965-969

Wright HL, McCarthy HS, Middleton J and Marshall MJ (2009). RANK, RANKL and Osteoprotegerin in bone biology and disease. *Curr Rev Musc Med* 2:56-64

McCarthy HS, Williams JHH, Davie MWJ and Marshall MJ (2009). Platelet-derived growth factor stimulates osteoprotegerin production in osteoblastic cells. *J Cell Physiol* 218:350-4

Prizes

Winning abstract entry for an accommodation and registration package to the 4th International Workshop on Advances in the Molecular Pharmacology and Therapeutics of Bone Disease, Oxford, UK, July 2009

Winning poster presentation of "Platelet-derived growth factor stimulates OPG production in osteoblastic cells" Joint 3rd prize at the RJAH Orthopaedic Hospital annual Research Day, 2008