

11 Bibliography

- Aaltomaa, S., P. Lipponen, M. Eskelinen, V.M. Kosma, S. Marin, E. Alhava, and K. Syrjanen. 1992. Lymphocyte infiltrates as a prognostic variable in female breast cancer. *Eur J Cancer*. 28A:859-64.
- Alenzi, F.Q. 2004. Links between apoptosis, proliferation and the cell cycle. *Br J Biomed Sci*. 61:99-102.
- Alevizos, I., M. Mahadevappa, X. Zhang, H. Ohyama, Y. Kohno, M. Posner, G.T. Gallagher, M. Varvares, D. Cohen, D. Kim, R. Kent, R.B. Donoff, R. Todd, C.M. Yung, J.A. Warrington, and D.T. Wong. 2001. Oral cancer in vivo gene expression profiling assisted by laser capture microdissection and microarray analysis. *Oncogene*. 20:6196-204.
- Allen, R.T., W.J. Hunter, 3rd, and D.K. Agrawal. 1997. Morphological and biochemical characterization and analysis of apoptosis. *J Pharmacol Toxicol Methods*. 37:215-28.
- Archer, S., S. Meng, J. Wu, J. Johnson, R. Tang, and R. Hodin. 1998a. Butyrate inhibits colon carcinoma cell growth through two distinct pathways. *Surgery*. 124:248-53.
- Archer, S.Y., S. Meng, A. Shei, and R.A. Hodin. 1998b. p21(WAF1) is required for butyrate-mediated growth inhibition of human colon cancer cells. *Proc Natl Acad Sci U S A*. 95:6791-6.
- Arvanitakis, L., E. Geras-Raaka, A. Varma, M.C. Gershengorn, and E. Cesarman. 1997. Human herpesvirus KSHV encodes a constitutively active G-protein-coupled receptor linked to cell proliferation. *Nature*. 385:347-50.
- Ascoli, M., and D. Puett. 1978. Inhibition of the degradation of receptor-bound human choriogonadotropin by lysosomotropic agents, protease inhibitors, and metabolic inhibitors. *J Biol Chem*. 253:7832-8.
- Augeron, C., and C.L. Laboissee. 1984. Emergence of permanently differentiated cell clones in a human colonic cancer cell line in culture after treatment with sodium butyrate. *Cancer Res*. 44:3961-9.
- Ausio, J., and K.E. van Holde. 1986. Histone hyperacetylation: its effects on nucleosome conformation and stability. *Biochemistry (John Wiley & Sons)*. 25:1421-1428.
- Baron-Delage, S., L. Mahraoui, A. Cadoret, D. Veissiere, J.L. Taillemite, E. Chastre, C. Gespach, A. Zweibaum, J. Capeau, E. Brot-Laroche, and G. Cherqui. 1996. Dereglulation of hexose transporter expression in Caco-2 cells by ras and polyoma middle T oncogenes. *Am J Physiol*. 270:G314-23.
- Bartram, H.P., W. Scheppach, H. Schmid, A. Hofmann, G. Dusel, F. Richter, A. Richter, and H. Kasper. 1993. Proliferation of human colonic mucosa as an intermediate biomarker of carcinogenesis: effects of butyrate, deoxycholate, calcium, ammonia, and pH. *Cancer research*. 53:3283-3288.
- Bauer-Marinovic, M., S. Florian, K. Muller-Schmehl, H. Glatt, and G. Jacobasch. 2006. Dietary resistant starch type 3 prevents tumor induction by 1,2-dimethylhydrazine and alters proliferation, apoptosis and dedifferentiation in rat colon. *Carcinogenesis*. 27:1849-59.
- Baylin, S.B., J.G. Herman, J.R. Graff, P.M. Vertino, and J.P. Issa. 1998. Alterations in DNA methylation: a fundamental aspect of neoplasia. *Adv Cancer Res*. 72:141-96.
- Bedi, A., P.J. Pasricha, A.J. Akhtar, J.P. Barber, G.C. Bedi, F.M. Giardiello, B.A. Zehnbaauer, S.R. Hamilton, and R.J. Jones. 1995. Inhibition of apoptosis during development of colorectal cancer. *Cancer Res*. 55:1811-6.
- Bhatia, P., W.R. Taylor, A.H. Greenberg, and J.A. Wright. 1994. Comparison of glyceraldehyde-3-phosphate dehydrogenase and 28S-ribosomal RNA gene expression as RNA loading controls for northern blot analysis of cell lines of varying malignant potential. *Anal Biochem*. 216:223-6.
- Bhowmick, N.A., A. Chytil, D. Plieth, A.E. Gorska, N. Dumont, S. Shappell, M.K. Washington, E.G. Neilson, and H.L. Moses. 2004. TGF-beta signaling in fibroblasts modulates the oncogenic potential of adjacent epithelia. *Science*. 303:848-51.
- Bingham, S., and E. Riboli. 2004. Diet and cancer--the European Prospective Investigation into Cancer and Nutrition. *Nat Rev Cancer*. 4:206-15.
- Bingham, S.A. 2000. Diet and colorectal cancer prevention. *Biochem Soc Trans*. 28:12-6.
- Bingham, S.A., N.E. Day, R. Luben, P. Ferrari, N. Slimani, T. Norat, F. Clavel-Chapelon, E. Kesse, A. Nieters, H. Boeing, A. Tjonneland, K. Overvad, C. Martinez, M. Dorransoro,

- C.A. Gonzalez, T.J. Key, A. Trichopoulou, A. Naska, P. Vineis, R. Tumino, V. Krogh, H.B. Bueno-de-Mesquita, P.H. Peeters, G. Berglund, G. Hallmans, E. Lund, G. Skeie, R. Kaaks, and E. Riboli. 2003. Dietary fibre in food and protection against colorectal cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC): an observational study. *Lancet*. 361:1496-501.
- Birkenkamp-Demtroder, K., L.L. Christensen, S.H. Olesen, C.M. Frederiksen, P. Laiho, L.A. Aaltonen, S. Laurberg, F.B. Sorensen, R. Hagemann, and O.R. TF. 2002. Gene expression in colorectal cancer. *Cancer Res*. 62:4352-63.
- Blottiere, H.M., B. Buecher, J.P. Galmiche, and C. Cherbut. 2003. Molecular analysis of the effect of short-chain fatty acids on intestinal cell proliferation. *Proc Nutr Soc*. 62:101-6.
- Bodmer, W.F., C.J. Bailey, J. Bodmer, H.J. Bussey, A. Ellis, P. Gorman, F.C. Lucibello, V.A. Murday, S.H. Rider, P. Scambler, and et al. 1987. Localization of the gene for familial adenomatous polyposis on chromosome 5. *Nature*. 328:614-6.
- Bolufer, P., F. Lo Coco, D. Grimwade, E. Barragan, D. Diverio, B. Cassinat, C. Chomienne, M. Gonzalez, D. Colomer, M.T. Gomez, I. Marugan, J. Roman, M.D. Delgado, J.A. Garcia-Marco, R. Bornstein, J.L. Vizmanos, B. Martinez, J. Jansen, A. Villegas, J.M. de Blas, P. Cabello, and M.A. Sanz. 2001. Variability in the levels of PML-RAR alpha fusion transcripts detected by the laboratories participating in an external quality control program using several reverse transcription polymerase chain reaction protocols. *Haematologica*. 86:570-6.
- Bonnotte, B., N. Favre, S. Reveneau, O. Micheau, N. Droin, C. Garrido, A. Fontana, B. Chauffert, E. Solary, and F. Martin. 1998. Cancer cell sensitization to fas-mediated apoptosis by sodium butyrate. *Cell Death Differ*. 5:480-7.
- Boren, J., W.N. Lee, S. Bassilian, J.J. Centelles, S. Lim, S. Ahmed, L.G. Boros, and M. Cascante. 2003. The stable isotope-based dynamic metabolic profile of butyrate-induced HT29 cell differentiation. *Journal of Biological Chemistry*. 278:28395-28402.
- Bouvier, M., W.P. Hausdorff, A. De Blasi, B.F. O'Dowd, B.K. Kobilka, M.G. Caron, and R.J. Lefkowitz. 1988. Removal of phosphorylation sites from the beta 2-adrenergic receptor delays onset of agonist-promoted desensitization. *Nature*. 333:370-3.
- Briscoe, C.P., M. Tadayyon, J.L. Andrews, W.G. Benson, J.K. Chambers, M.M. Eilert, C. Ellis, N.A. Elshourbagy, A.S. Goetz, D.T. Minnick, P.R. Murdock, H.R. Sauls, Jr, U. Shabon, L.D. Spinage, J.C. Strum, P.G. Szekeres, K.B. Tan, J.M. Way, D.M. Ignar, S. Wilson, and A.I. Muir. 2003. The orphan G protein-coupled receptor GPR40 is activated by medium and long chain fatty acids. *Journal of Biological Chemistry*. 278:11303-11311.
- Brown, A.J., S.M. Goldsworthy, A.A. Barnes, M.M. Eilert, L. Tcheang, D. Daniels, A.I. Muir, M.J. Wigglesworth, I. Kinghorn, N.J. Fraser, N.B. Pike, J.C. Strum, K.M. Steplewski, P.R. Murdock, J.C. Holder, F.H. Marshall, P.G. Szekeres, S. Wilson, D.M. Ignar, S.M. Foord, A. Wise, and S.J. Dowell. 2003. The Orphan G protein-coupled receptors GPR41 and GPR43 are activated by propionate and other short chain carboxylic acids. *Journal of Biological Chemistry*. 278:11312-11319.
- Brown, A.J., S. Jupe, and C.P. Briscoe. 2005. A family of fatty acid binding receptors. *DNA Cell Biol*. 24:54-61.
- Bruce, W.R. 1987. Recent hypotheses for the origin of colon cancer. *Cancer Res*. 47:4237-42.
- Bruce, W.R., T.M. Wolever, and A. Giacca. 2000. Mechanisms linking diet and colorectal cancer: the possible role of insulin resistance. *Nutr Cancer*. 37:19-26.
- Bryan, E.J., V.J. Jokubaitis, N.L. Chamberlain, S.W. Baxter, E. Dawson, D.Y. Choong, and I.G. Campbell. 2002. Mutation analysis of EP300 in colon, breast and ovarian carcinomas. *Int J Cancer*. 102:137-41.
- Buda, A., D. Qualtrough, M.A. Jepson, D. Martinez, C. Paraskeva, and M. Pignatelli. 2003. Butyrate downregulates alpha2beta1 integrin: a possible role in the induction of apoptosis in colorectal cancer cell lines. *Gut*. 52:729-34.
- Burkitt, D.P. 1971. Possible relationships between bowel cancer and dietary habits. *Proc R Soc Med*. 64:964-5.
- Bustin, S.A. 2000. Absolute quantification of mRNA using real-time reverse transcription polymerase chain reaction assays. *J Mol Endocrinol*. 25:169-93.
- Bustin, S.A. 2002. Quantification of mRNA using real-time reverse transcription PCR (RT-PCR): trends and problems. *J Mol Endocrinol*. 29:23-39.
- Bustin, S.A., V. Benes, T. Nolan, and M.W. Pfaffl. 2005. Quantitative real-time RT-PCR--a perspective. *J Mol Endocrinol*. 34:597-601.

- Bustin, S.A., and R. Mueller. 2006. Real-time reverse transcription PCR and the detection of occult disease in colorectal cancer. *Mol Aspects Med.* 27:192-223.
- Bustin, S.A., and T. Nolan. 2004a. Pitfalls of quantitative real-time reverse-transcription polymerase chain reaction. *J Biomol Tech.* 15:155-66.
- Bustin, S.A., and T. Nolan. 2004b. Template handling, preparation, and quantification. *The Real-Time PCR Encyclopaedia A-Z of Quantitative PCR*:87-120.
- Butt, A.J., A. Hague, and C. Paraskeva. 1997. Butyrate- but not TGFbeta1-induced apoptosis of colorectal adenoma cells is associated with increased expression of the differentiation markers E-cadherin and alkaline phosphatase. *Cell Death Differ.* 4:725-32.
- Byers, T., B. Levin, D. Rothenberger, G.D. Dodd, and R.A. Smith. 1997. American Cancer Society guidelines for screening and surveillance for early detection of colorectal polyps and cancer: update 1997. American Cancer Society Detection and Treatment Advisory Group on Colorectal Cancer. *CA Cancer J Clin.* 47:154-60.
- Cahill, D.P., C. Lengauer, J. Yu, G.J. Riggins, J.K. Willson, S.D. Markowitz, K.W. Kinzler, and B. Vogelstein. 1998. Mutations of mitotic checkpoint genes in human cancers. *Nature.* 392:300-3.
- Calvert, P.M., and H. Frucht. 2002. The genetics of colorectal cancer. *Ann Intern Med.* 137:603-12.
- Candido, E.P., R. Reeves, and J.R. Davie. 1978. Sodium butyrate inhibits histone deacetylation in cultured cells. *Cell.* 14:105-113.
- Cannon-Albright, L.A., M.H. Skolnick, D.T. Bishop, R.G. Lee, and R.W. Burt. 1988. Common inheritance of susceptibility to colonic adenomatous polyps and associated colorectal cancers. *N Engl J Med.* 319:533-7.
- Carracedo, J., R. Ramirez, A. Martin-Malo, M. Rodriguez, and P. Aljama. 1998. Nonbiocompatible hemodialysis membranes induce apoptosis in mononuclear cells: the role of G-proteins. *J Am Soc Nephrol.* 9:46-53.
- Cassidy, A., S.A. Bingham, and J.H. Cummings. 1994. Starch intake and colorectal cancer risk: an international comparison. *Br J Cancer.* 69:937-42.
- Chai, F., A. Evdokiou, G.P. Young, and P.D. Zalewski. 2000. Involvement of p21(Waf1/Cip1) and its cleavage by DEVD-caspase during apoptosis of colorectal cancer cells induced by butyrate. *Carcinogenesis.* 21:7-14.
- Chalkley, R., and A. Shires. 1985. The isolation of HTC variant cells which can replicate in butyrate. Changes in histone acetylation and tyrosine aminotransferase induction. *J Biol Chem.* 260:7698-704.
- Chambers, R.C. 2002. Gene expression profiling: good housekeeping and a clean message. *Thorax.* 57:754-6.
- Chapkin, R.S., Y. Fan, and J.R. Lupton. 2000. Effect of diet on colonic-programmed cell death: molecular mechanism of action. *Toxicology letters.* 112-113:411-414.
- Chapman, M.A., M.F. Grahn, M.A. Boyle, M. Hutton, J. Rogers, and N.S. Williams. 1994. Butyrate oxidation is impaired in the colonic mucosa of sufferers of quiescent ulcerative colitis. *Gut.* 35:73-76.
- Chen, J.S., D.V. Faller, and R.A. Spanjaard. 2003. Short-chain fatty acid inhibitors of histone deacetylases: promising anticancer therapeutics? 3:219-236.
- Choisy, S.C., J.C. Hancox, L.A. Arberry, A.M. Reynolds, M.J. Shattock, and A.F. James. 2004. Evidence for a novel K(+) channel modulated by alpha(1A)-adrenoceptors in cardiac myocytes. *Mol Pharmacol.* 66:735-48.
- Chung, D.C. 2000. The genetic basis of colorectal cancer: insights into critical pathways of tumorigenesis. *Gastroenterology.* 119:854-65.
- Clarke, K.O., R. Feinman, and L.E. Harrison. 2001. Tributyrin, an oral butyrate analogue, induces apoptosis through the activation of caspase-3. *Cancer Lett.* 171:57-65.
- Clemens, J.C., C.A. Worby, N. Simonson-Leff, M. Muda, T. Maehama, B.A. Hemmings, and J.E. Dixon. 2000. Use of double-stranded RNA interference in Drosophila cell lines to dissect signal transduction pathways. *Proc Natl Acad Sci U S A.* 97:6499-503.
- Clemente, C.G., M.C. Mihm, Jr., R. Bufalino, S. Zurrada, P. Collini, and N. Cascinelli. 1996. Prognostic value of tumor infiltrating lymphocytes in the vertical growth phase of primary cutaneous melanoma. *Cancer.* 77:1303-10.
- Coady, M.J., M.H. Chang, F.M. Charron, C. Plata, B. Wallendorff, J.F. Sah, S.D. Markowitz, M.F. Romero, and J.Y. Lapointe. 2004. The Human Tumor Suppressor Gene SLC5A8 Expresses a Na+/Monocarboxylate Cotransporter. *The Journal of physiology.*

- Comalada, M., E. Bailon, O. de Haro, F. Lara-Villoslada, J. Xaus, A. Zarzuelo, and J. Galvez. 2006. The effects of short-chain fatty acids on colon epithelial proliferation and survival depend on the cellular phenotype. *J Cancer Res Clin Oncol.* 132:487-97.
- Cottrell, S., D. Bicknell, L. Kaklamanis, and W.F. Bodmer. 1992. Molecular analysis of APC mutations in familial adenomatous polyposis and sporadic colon carcinomas. *Lancet.* 340:626-30.
- Covington, D.K., C.A. Briscoe, A.J. Brown, and C.K. Jayawickreme. 2006. The G-protein-coupled receptor 40 family (GPR40-GPR43) and its role in nutrient sensing. *Biochem Soc Trans.* 34:770-3.
- Csordas, A. 1996. Butyrate, aspirin and colorectal cancer. *Eur J Cancer Prev.* 5:221-31.
- Cuff, M., J. Dyer, M. Jones, and S. Shirazi-Beechey. 2005. The human colonic monocarboxylate transporter Isoform 1: its potential importance to colonic tissue homeostasis. *Gastroenterology.* 128:676-86.
- Cuff, M.A., D.W. Lambert, and S.P. Shirazi-Beechey. 2002. Substrate-induced regulation of the human colonic monocarboxylate transporter, MCT1. *The Journal of physiology.* 539:361-371.
- Cuff, M.A., and S.P. Shirazi-Beechey. 2005. The human monocarboxylate transporter MCT1: gene structure and regulation. *Am J Physiol Gastrointest Liver Physiol.* 289:G977; author reply G977-9.
- Cummings. 1987. SCFA and portal hepatic and venous blood.
- Cummings, J.H., E.R. Beatty, S.M. Kingman, S.A. Bingham, and H.N. Englyst. 1996. Digestion and physiological properties of resistant starch in the human large bowel. *Br J Nutr.* 75:733-47.
- Cummings, J.H., and G.T. Macfarlane. 1997. Role of intestinal bacteria in nutrient metabolism. *JPEN J Parenter Enteral Nutr.* 21:357-65.
- Cummings, J.H., E.W. Pomare, W.J. Branch, C.P. Naylor, and G.T. Macfarlane. 1987. Short chain fatty acids in human large intestine, portal, hepatic and venous blood. *Gut.* 28:1221-7.
- Cummings, J.H., and A.M. Stephen. 1980. The role of dietary fibre in the human colon. *Can Med Assoc J.* 123:1109-14.
- Curry, J., C. McHale, and M.T. Smith. 2002. Low efficiency of the Moloney murine leukemia virus reverse transcriptase during reverse transcription of rare t(8;21) fusion gene transcripts. *Biotechniques.* 32:768, 770, 772, 754-5.
- Cusack, J.C., Jr. 2003. Overcoming antiapoptotic responses to promote chemosensitivity in metastatic colorectal cancer to the liver. *Ann Surg Oncol.* 10:852-62.
- Daly, K., M.A. Cuff, F. Fung, and S.P. Shirazi-Beechey. 2005. The importance of colonic butyrate transport to the regulation of genes associated with colonic tissue homeostasis. *Biochem Soc Trans.* 33:733-5.
- Daly, K., S.P. Shirazi-Beechey, M.A. Cuff, F. Fung, A.W. Walker, S.H. Duncan, E.C. McWilliam Leitch, M.W. Child, H.J. Flint, B.L. Pool-Zobel, V. Selvaraju, J. Sauer, T. Kautenburger, J. Kiefer, K.K. Richter, M. Soom, S. Wolf, G.P. Young, R.K. Le Leu, C. Rupnarain, Z. Dlamini, S. Naicker, and K. Bhoola. 2006. Microarray analysis of butyrate regulated genes in colonic epithelial cells
- Dass, N.B., A.K. John, A.K. Bassil, C.W. Crumbley, W.R. Shehee, F.P. Maurio, G.B. Moore, C.M. Taylor, and G.J. Sanger. 2007. The relationship between the effects of short-chain fatty acids on intestinal motility in vitro and GPR43 receptor activation. *Neurogastroenterol Motil.* 19:66-74.
- Davis, M.G., Y. Kawai, and I.J. Arinze. 2000. Involvement of G α 2 in sodium butyrate-induced erythroblastic differentiation of K562 cells. *Biochem J.* 346 Pt 2:455-61.
- de Kok, J.B., R.W. Roelofs, B.A. Giesendorf, J.L. Pennings, E.T. Waas, T. Feuth, D.W. Swinkels, and P.N. Span. 2005. Normalization of gene expression measurements in tumor tissues: comparison of 13 endogenous control genes. *Lab Invest.* 85:154-9.
- De Wever, O., and M. Mareel. 2003. Role of tissue stroma in cancer cell invasion. *J Pathol.* 200:429-47.
- Della Ragione, F., V. Criniti, V. Della Pietra, A. Borriello, A. Oliva, S. Indaco, T. Yamamoto, and V. Zappia. 2001. Genes modulated by histone acetylation as new effectors of butyrate activity. *FEBS Lett.* 499:199-204.
- Dheda, K., J.F. Huggett, S.A. Bustin, M.A. Johnson, G. Rook, and A. Zumla. 2004. Validation of housekeeping genes for normalizing RNA expression in real-time PCR. *Biotechniques.* 37:112-4, 116, 118-9.

- Dieffenbach, C.W., T.M. Lowe, and G.S. Dveksler. 1993. General concepts for PCR primer design. *PCR Methods Appl.* 3:S30-7.
- Doench, J.G., C.P. Petersen, and P.A. Sharp. 2003. siRNAs can function as miRNAs. *Genes Dev.* 17:438-42.
- Dyer, J., K.S. Salmon, L. Zibrik, and S.P. Shirazi-Beechey. 2005. Expression of sweet taste receptors of the T1R family in the intestinal tract and enteroendocrine cells. *Biochem Soc Trans.* 33:302-5.
- Dyer, J., S. Vayro, T.P. King, and S.P. Shirazi-Beechey. 2003a. Glucose sensing in the intestinal epithelium. *Eur J Biochem.* 270:3377-88.
- Dyer, J., S. Vayro, and S.P. Shirazi-Beechey. 2003b. Mechanism of glucose sensing in the small intestine. *Biochem Soc Trans.* 31:1140-2.
- Eastwood, M.A., and E.R. Morris. 1992. Physical properties of dietary fiber that influence physiological function: a model for polymers along the gastrointestinal tract. *Am J Clin Nutr.* 55:436-42.
- Einspahr, J.G., D.S. Alberts, S.M. Gapstur, R.M. Bostick, S.S. Emerson, and E.W. Gerner. 1997. Surrogate end-point biomarkers as measures of colon cancer risk and their use in cancer chemoprevention trials. *Cancer Epidemiol Biomarkers Prev.* 6:37-48.
- Elbashir, S.M., J. Harborth, W. Lendeckel, A. Yalcin, K. Weber, and T. Tuschl. 2001. Duplexes of 21-nucleotide RNAs mediate RNA interference in cultured mammalian cells. *Nature.* 411:494-8.
- Emenaker, N.J., and M.D. Basson. 2001. Short chain fatty acids differentially modulate cellular phenotype and c-myc protein levels in primary human nonmalignant and malignant colonocytes. *Dig Dis Sci.* 46:96-105.
- Emenaker, N.J., G.M. Calaf, D. Cox, M.D. Basson, and N. Qureshi. 2001. Short-chain fatty acids inhibit invasive human colon cancer by modulating uPA, TIMP-1, TIMP-2, mutant p53, Bcl-2, Bax, p21 and PCNA protein expression in an in vitro cell culture model. *The Journal of nutrition.* 131:3041S-6S.
- Englyst, H.N., and J.H. Cummings. 1985. Digestion of the polysaccharides of some cereal foods in the human small intestine. *Am J Clin Nutr.* 42:778-87.
- Englyst, H.N., S.M. Kingman, and J.H. Cummings. 1992. Classification and measurement of nutritionally important starch fractions. *Eur J Clin Nutr.* 46 Suppl 2:S33-50.
- Esteller, M., and J.G. Herman. 2002. Cancer as an epigenetic disease: DNA methylation and chromatin alterations in human tumours. *J Pathol.* 196:1-7.
- Evan, G.I., A.H. Wyllie, C.S. Gilbert, T.D. Littlewood, H. Land, M. Brooks, C.M. Waters, L.Z. Penn, and D.C. Hancock. 1992. Induction of apoptosis in fibroblasts by c-myc protein. *Cell.* 69:119-28.
- Fan, Y.Y., J. Zhang, R. Barhoumi, R.C. Burghardt, N.D. Turner, J.R. Lupton, and R.S. Chapkin. 1999. Antagonism of CD95 signaling blocks butyrate induction of apoptosis in young adult mouse colonic cells. *Am J Physiol.* 277:C310-9.
- Fearon, E.R., and B. Vogelstein. 1990. A genetic model for colorectal tumorigenesis. *Cell.* 61:759-67.
- Fedorov, Y., E.M. Anderson, A. Birmingham, A. Reynolds, J. Karpilow, K. Robinson, D. Leake, W.S. Marshall, and A. Khvorova. 2006. Off-target effects by siRNA can induce toxic phenotype. *Rna.* 12:1188-96.
- Feinberg, A.P. 2001. Cancer epigenetics takes center stage. *Proc Natl Acad Sci U S A.* 98:392-4.
- Fend, F., M.R. Emmert-Buck, R. Chuaqui, K. Cole, J. Lee, L.A. Liotta, and M. Raffeld. 1999. Immuno-LCM: laser capture microdissection of immunostained frozen sections for mRNA analysis. *Am J Pathol.* 154:61-6.
- Ferguson, S.S. 2001. Evolving concepts in G protein-coupled receptor endocytosis: the role in receptor desensitization and signaling. *Pharmacol Rev.* 53:1-24.
- Fiaschi, T., P. Chiarugi, F. Buricchi, E. Giannoni, M.L. Taddei, D. Talini, G. Cozzi, S. Zecchi-Orlandini, G. Raugei, and G. Ramponi. 2001. Low molecular weight protein-tyrosine phosphatase is involved in growth inhibition during cell differentiation. *J Biol Chem.* 276:49156-63.
- Fire, A., S. Xu, M.K. Montgomery, S.A. Kostas, S.E. Driver, and C.C. Mello. 1998. Potent and specific genetic interference by double-stranded RNA in *Caenorhabditis elegans*. *Nature.* 391:806-11.
- Fleige, S., and M.W. Pfaffl. 2006. RNA integrity and the effect on the real-time qRT-PCR performance. *Mol Aspects Med.* 27:126-39.

- Fleige, S., V. Walf, S. Huch, C. Prgomet, J. Sehm, and M.W. Pfaffl. 2006. Comparison of relative mRNA quantification models and the impact of RNA integrity in quantitative real-time RT-PCR. *Biotechnol Lett.* 28:1601-13.
- Flood, D.M., N.S. Weiss, L.S. Cook, J.C. Emerson, S.M. Schwartz, and J.D. Potter. 2000. Colorectal cancer incidence in Asian migrants to the United States and their descendants. *Cancer Causes Control.* 11:403-11.
- Fordtran, J.S. 1971. Organic anions in fecal contents. *N Engl J Med.* 284:329-30.
- Foss, R.D., N. Guha-Thakurta, R.M. Conran, and P. Gutman. 1994. Effects of fixative and fixation time on the extraction and polymerase chain reaction amplification of RNA from paraffin-embedded tissue. Comparison of two housekeeping gene mRNA controls. *Diagn Mol Pathol.* 3:148-55.
- Frech, B., and E. Peterhans. 1994. RT-PCR: 'background priming' during reverse transcription. *Nucleic Acids Res.* 22:4342-3.
- Freeman, W.M., S.J. Walker, and K.E. Vrana. 1999. Quantitative RT-PCR: pitfalls and potential. *Biotechniques.* 26:112-22, 124-5.
- Freudenheim, J.L., S. Graham, P.J. Horvath, J.R. Marshall, B.P. Haughey, and G. Wilkinson. 1990. Risks associated with source of fiber and fiber components in cancer of the colon and rectum. *Cancer Res.* 50:3295-300.
- Friedenreich, C.M., R.F. Brant, and E. Riboli. 1994. Influence of methodologic factors in a pooled analysis of 13 case-control studies of colorectal cancer and dietary fiber. *Epidemiology.* 5:66-79.
- Fryer, R.M., J. Randall, T. Yoshida, L.L. Hsiao, J. Blumenstock, K.E. Jensen, T. Dimofte, R.V. Jensen, and S.R. Gullans. 2002. Global analysis of gene expression: methods, interpretation, and pitfalls. *Exp Nephrol.* 10:64-74.
- Fuchs, C.S., E.L. Giovannucci, G.A. Colditz, D.J. Hunter, F.E. Speizer, and W.C. Willett. 1994. A prospective study of family history and the risk of colorectal cancer. *The New England journal of medicine.* 331:1669-1674.
- Furukawa, T., S. Watanabe, T. Kodama, Y. Sato, Y. Shimosato, and K. Suemasu. 1985. T-zone histiocytes in adenocarcinoma of the lung in relation to postoperative prognosis. *Cancer.* 56:2651-6.
- Gamet, L., D. Daviaud, C. Denis-Pouxviel, C. Remesy, and J.C. Murat. 1992. Effects of short-chain fatty acids on growth and differentiation of the human colon-cancer cell line HT29. *International journal of cancer. Journal international du cancer.* 52:286-289.
- Ganapathy, V., E. Gopal, S. Miyauchi, and P.D. Prasad. 2005. Biological functions of SLC5A8, a candidate tumour suppressor. *Biochem Soc Trans.* 33:237-40.
- Gaschott, T., D. Steinhilber, V. Milovic, and J. Stein. 2001. Tributyrin, a stable and rapidly absorbed prodrug of butyric acid, enhances antiproliferative effects of dihydroxycholecalciferol in human colon cancer cells. *J Nutr.* 131:1839-43.
- Gavrieli, Y., Y. Sherman, and S.A. Ben-Sasson. 1992. Identification of programmed cell death in situ via specific labeling of nuclear DNA fragmentation. *J Cell Biol.* 119:493-501.
- Geley, S., and C. Muller. 2004. RNAi: ancient mechanism with a promising future. *Exp Gerontol.* 39:985-98.
- Germann, A., S. Dihlmann, M. Hergenhausen, M.K. Doeberitz, and R. Koesters. 2003. Expression profiling of CC531 colon carcinoma cells reveals similar regulation of beta-catenin target genes by both butyrate and aspirin. *Int J Cancer.* 106:187-97.
- Gibbs, P.J., C. Cameron, L.C. Tan, S.A. Sadek, and W.M. Howell. 2003. House keeping genes and gene expression analysis in transplant recipients: a note of caution. *Transpl Immunol.* 12:89-97.
- Gibson, P.R., I. Moeller, O. Kagelari, M. Folino, and G.P. Young. 1992. Contrasting effects of butyrate on the expression of phenotypic markers of differentiation in neoplastic and non-neoplastic colonic epithelial cells in vitro. *Journal of gastroenterology and hepatology.* 7:165-172.
- Gil-Gomez, G., A. Berns, and H.J. Brady. 1998. A link between cell cycle and cell death: Bax and Bcl-2 modulate Cdk2 activation during thymocyte apoptosis. *Embo J.* 17:7209-18.
- Ginzinger, D.G. 2002. Gene quantification using real-time quantitative PCR: an emerging technology hits the mainstream. *Exp Hematol.* 30:503-12.
- Giovannucci, E., G.A. Colditz, M.J. Stampfer, D. Hunter, B.A. Rosner, W.C. Willett, and F.E. Speizer. 1994a. A prospective study of cigarette smoking and risk of colorectal adenoma and colorectal cancer in U.S. women. *J Natl Cancer Inst.* 86:192-9.

- Giovannucci, E., E.B. Rimm, M.J. Stampfer, G.A. Colditz, A. Ascherio, J. Kearney, and W.C. Willett. 1994b. A prospective study of cigarette smoking and risk of colorectal adenoma and colorectal cancer in U.S. men. *J Natl Cancer Inst.* 86:183-91.
- Goidin, D., A. Mamessier, M.J. Staquet, D. Schmitt, and O. Berthier-Vergnes. 2001. Ribosomal 18S RNA prevails over glyceraldehyde-3-phosphate dehydrogenase and beta-actin genes as internal standard for quantitative comparison of mRNA levels in invasive and noninvasive human melanoma cell subpopulations. *Anal Biochem.* 295:17-21.
- Goldin, B.R., and S.L. Gorbach. 1976. The relationship between diet and rat fecal bacterial enzymes implicated in colon cancer. *J Natl Cancer Inst.* 57:371-5.
- Goldsworthy, S.M., P.S. Stockton, C.S. Trempus, J.F. Foley, and R.R. Maronpot. 1999. Effects of fixation on RNA extraction and amplification from laser capture microdissected tissue. *Mol Carcinog.* 25:86-91.
- Gope, R., and M.L. Gope. 1993. Effect of sodium butyrate on the expression of retinoblastoma (RB1) and P53 gene and phosphorylation of retinoblastoma protein in human colon tumor cell line HT29. *Cell Mol Biol (Noisy-le-grand).* 39:589-97.
- Gordon, J.I., G.H. Schmidt, and K.A. Roth. 1992. Studies of intestinal stem cells using normal, chimeric, and transgenic mice. *Faseb J.* 6:3039-50.
- Grimble, G. 1989. Fibre, fermentation, flora, and flatus. *Gut.* 30:6-13.
- Guda, K., H. Cui, S. Garg, M. Dong, P.R. Nambiar, L.E. Achenie, and D.W. Rosenberg. 2003. Multistage gene expression profiling in a differentially susceptible mouse colon cancer model. *Cancer Lett.* 191:17-25.
- Gunter, M.J., and M.F. Leitzmann. 2006. Obesity and colorectal cancer: epidemiology, mechanisms and candidate genes. *J Nutr Biochem.* 17:145-56.
- Gutkind, J.S. 2000. Regulation of mitogen-activated protein kinase signaling networks by G protein-coupled receptors. 2000:RE1.
- Hadcock, J.R., and C.C. Malbon. 1988. Down-regulation of beta-adrenergic receptors: agonist-induced reduction in receptor mRNA levels. *Proc Natl Acad Sci U S A.* 85:5021-5.
- Hague, A., A.J. Butt, and C. Paraskeva. 1996. The role of butyrate in human colonic epithelial cells: an energy source or inducer of differentiation and apoptosis? *Proc Nutr Soc.* 55:937-43.
- Hague, A., D.J. Elder, D.J. Hicks, and C. Paraskeva. 1995. Apoptosis in colorectal tumour cells: induction by the short chain fatty acids butyrate, propionate and acetate and by the bile salt deoxycholate. *Int J Cancer.* 60:400-6.
- Hague, A., A.M. Manning, K.A. Hanlon, L.I. Huschtscha, D. Hart, and C. Paraskeva. 1993. Sodium butyrate induces apoptosis in human colonic tumour cell lines in a p53-independent pathway: implications for the possible role of dietary fibre in the prevention of large-bowel cancer. *International journal of cancer. Journal international du cancer.* 55:498-505.
- Hague, A., and C. Paraskeva. 1995. The short-chain fatty acid butyrate induces apoptosis in colorectal tumour cell lines. *Eur J Cancer Prev.* 4:359-64.
- Hall, P.A., P.J. Coates, B. Ansari, and D. Hopwood. 1994. Regulation of cell number in the mammalian gastrointestinal tract: the importance of apoptosis. *J Cell Sci.* 107 (Pt 12):3569-77.
- Halttunen, T., A. Marttinen, I. Rantala, H. Kainulainen, and M. Maki. 1996. Fibroblasts and transforming growth factor beta induce organization and differentiation of T84 human epithelial cells. *Gastroenterology.* 111:1252-62.
- Hammond, S.M., E. Bernstein, D. Beach, and G.J. Hannon. 2000. An RNA-directed nuclease mediates post-transcriptional gene silencing in Drosophila cells. *Nature.* 404:293-6.
- Han, J., R.L. Farnsworth, J.L. Tiwari, J. Tian, H. Lee, P. Ikonomi, A.P. Byrnes, J.L. Goodman, and R.K. Puri. 2006. Quality prediction of cell substrate using gene expression profiling. *Genomics.* 87:552-9.
- Hanahan, D., and R.A. Weinberg. 2000. The hallmarks of cancer. *Cell.* 100:57-70.
- Harborth, J., S.M. Elbashir, K. Vandenburgh, H. Manninga, S.A. Scaringe, K. Weber, and T. Tuschl. 2003. Sequence, chemical, and structural variation of small interfering RNAs and short hairpin RNAs and the effect on mammalian gene silencing. *Antisense Nucleic Acid Drug Dev.* 13:83-105.
- Harris, P.J., and L.R. Ferguson. 1993. Dietary fibre: its composition and role in protection against colorectal cancer. *Mutat Res.* 290:97-110.

- Harris, P.J., A.M. Robertson, M.E. Watson, C.M. Triggs, and L.R. Ferguson. 1993. The effects of soluble-fiber polysaccharides on the adsorption of a hydrophobic carcinogen to an insoluble dietary fiber. *Nutr Cancer*. 19:43-54.
- Haza, A.I., B. Glinghammar, A. Grandien, and J. Rafter. 2000. Effect of colonic luminal components on induction of apoptosis in human colonic cell lines. *Nutr Cancer*. 36:79-89.
- He, T.C., A.B. Sparks, C. Rago, H. Hermeking, L. Zawel, L.T. da Costa, P.J. Morin, B. Vogelstein, and K.W. Kinzler. 1998. Identification of c-MYC as a target of the APC pathway. *Science*. 281:1509-12.
- Heasley, L.E. 2001. Autocrine and paracrine signaling through neuropeptide receptors in human cancer. *Oncogene*. 20:1563-9.
- Heerdt, B.G., M.A. Houston, and L.H. Augenlicht. 1994. Potentiation by specific short-chain fatty acids of differentiation and apoptosis in human colonic carcinoma cell lines. *Cancer research*. 54:3288-3293.
- Hermans, E., M.A. Vanisberg, M. Geurts, and J.M. Maloteaux. 1997. Down-regulation of neurotensin receptors after ligand-induced internalization in rat primary cultured neurons. *Neurochem Int*. 31:291-9.
- Hill, M.J. 1995. Bacterial fermentation of complex carbohydrate in the human colon. *Eur J Cancer Prev*. 4:353-8.
- Hill, M.J. 2000. Molecular and clinical risk markers in colon cancer trials. *European journal of cancer*. 36:1288-1291.
- Hofmanova, J., A. Vaculova, A. Lojek, and A. Kozubik. 2005. Interaction of polyunsaturated fatty acids and sodium butyrate during apoptosis in HT-29 human colon adenocarcinoma cells. *Eur J Nutr*. 44:40-51.
- Hong, Y.H., Y. Nishimura, D. Hishikawa, H. Tsuzuki, H. Miyahara, C. Gotoh, K.C. Choi, D.D. Feng, C. Chen, H.G. Lee, K. Katoh, S.G. Roh, and S. Sasaki. 2005. Acetate and propionate short chain fatty acids stimulate adipogenesis via GPCR43. *Endocrinology*. 146:5092-9.
- Horn, F., E.M. van der Wenden, L. Oliveira, A.P. IJzerman, and G. Vriend. 2000. Receptors coupling to G proteins: is there a signal behind the sequence? *Proteins*. 41:448-459.
- Hough, S.R., I. Clements, P.J. Welch, and K.A. Wiederholt. 2006. Differentiation of mouse embryonic stem cells after RNA interference-mediated silencing of OCT4 and Nanog. *Stem Cells*. 24:1467-75.
- Howe, G.R., E. Benito, R. Castelleto, J. Cornee, J. Esteve, R.P. Gallagher, J.M. Iscovich, J. Deng-ao, R. Kaaks, G.A. Kune, and et al. 1992. Dietary intake of fiber and decreased risk of cancers of the colon and rectum: evidence from the combined analysis of 13 case-control studies. *J Natl Cancer Inst*. 84:1887-96.
- Hu, Y., J. Martin, R. Le Leu, and G.P. Young. 2002. The colonic response to genotoxic carcinogens in the rat: regulation by dietary fibre. *Carcinogenesis*. 23:1131-7.
- Hunt, R.A., G.J. Bhat, and K.M. Baker. 1999. Angiotensin II-stimulated induction of sis-inducing factor is mediated by pertussis toxin-insensitive G(q) proteins in cardiac myocytes. *Hypertension*. 34:603-8.
- Huppi, K., S.E. Martin, and N.J. Caplen. 2005. Defining and assaying RNAi in mammalian cells. *Mol Cell*. 17:1-10.
- Ilyas, M., J. Straub, I.P. Tomlinson, and W.F. Bodmer. 1999. Genetic pathways in colorectal and other cancers. *Eur J Cancer*. 35:1986-2002.
- Ishiguro, T., J. Saitoh, H. Yawata, H. Yamagishi, S. Iwasaki, and Y. Mitoma. 1995. Homogeneous quantitative assay of hepatitis C virus RNA by polymerase chain reaction in the presence of a fluorescent intercalater. *Anal Biochem*. 229:207-13.
- Itoh, Y., and S. Hinuma. 2005. GPR40, a free fatty acid receptor on pancreatic beta cells, regulates insulin secretion. *Hepatol Res*. 33:171-3.
- Itoh, Y., Y. Kawamata, M. Harada, M. Kobayashi, R. Fujii, S. Fukusumi, K. Ogi, M. Hosoya, Y. Tanaka, H. Uejima, H. Tanaka, M. Maruyama, R. Satoh, S. Okubo, H. Kizawa, H. Komatsu, F. Matsumura, Y. Noguchi, T. Shinohara, S. Hinuma, Y. Fujisawa, and M. Fujino. 2003. Free fatty acids regulate insulin secretion from pancreatic beta cells through GPR40. *Nature*. 422:173-176.
- Jackson, A.L., S.R. Bartz, J. Schelter, S.V. Kobayashi, J. Burchard, M. Mao, B. Li, G. Cavet, and P.S. Linsley. 2003. Expression profiling reveals off-target gene regulation by RNAi. *Nat Biotechnol*. 21:635-7.
- Jackson, A.L., and P.S. Linsley. 2004. Noise amidst the silence: off-target effects of siRNAs? *Trends Genet*. 20:521-4.

- Jacobs, L.R. 1988. Fiber and colon cancer. *Gastroenterol Clin North Am.* 17:747-60.
- Jass, J.R. 1985. Diet, butyric acid and differentiation of gastrointestinal tract tumours. *Med Hypotheses.* 18:113-8.
- Jass, J.R. 1986. Lymphocytic infiltration and survival in rectal cancer. *J Clin Pathol.* 39:585-9.
- Johnson, I.T. 1995. Butyrate and markers of neoplastic change in the colon. *Eur J Cancer Prev.* 4:365-71.
- Johnson, I.T. 2001. Mechanisms and anticarcinogenic effects of diet-related apoptosis in the intestinal mucosa. *Nutrition Research Reviews.* 14:229-256.
- Johnson, I.T. 2002. Anticarcinogenic effects of diet-related apoptosis in the colorectal mucosa. *Food Chem Toxicol.* 40:1171-8.
- Johnson, I.T., and E.K. Lund. 2007. Review article: nutrition, obesity and colorectal cancer. *Aliment Pharmacol Ther.* 26:161-81.
- Johnstone, R.W., and J.D. Licht. 2003. Histone deacetylase inhibitors in cancer therapy: is transcription the primary target? *Cancer Cell.* 4:13-8.
- Joseph, J., G. Mudduluru, S. Antony, S. Vashistha, P. Ajitkumar, and K. Somasundaram. 2004. Expression profiling of sodium butyrate (NaB)-treated cells: identification of regulation of genes related to cytokine signaling and cancer metastasis by NaB. *Oncogene.* 23:6304-15.
- Karaki, S., R. Mitsui, H. Hayashi, I. Kato, H. Sugiya, T. Iwanaga, J.B. Furness, and A. Kuwahara. 2006. Short-chain fatty acid receptor, GPR43, is expressed by enteroendocrine cells and mucosal mast cells in rat intestine. *Cell Tissue Res.* 324:353-60.
- Karaki, S.I., H. Tazoe, H. Hayashi, H. Kashiwabara, K. Tooyama, Y. Suzuki, and A. Kuwahara. 2007. Expression of the short-chain fatty acid receptor, GPR43, in the human colon. *J Mol Histol.*
- Karrer, E.E., J.E. Lincoln, S. Hogenhout, A.B. Bennett, R.M. Bostock, B. Martineau, W.J. Lucas, D.G. Gilchrist, and D. Alexander. 1995. In situ isolation of mRNA from individual plant cells: creation of cell-specific cDNA libraries. *Proc Natl Acad Sci U S A.* 92:3814-8.
- Kaur, P., and C.S. Potten. 1986. Cell migration velocities in the crypts of the small intestine after cytotoxic insult are not dependent on mitotic activity. *Cell Tissue Kinet.* 19:601-10.
- Kautenburger, T., G. Beyer-Sehlmeyer, G. Festag, N. Haag, S. Kuhler, A. Kuchler, A. Weise, B. Marian, W.H. Peters, T. Liehr, U. Claussen, and B.L. Pool-Zobel. 2005. The gut fermentation product butyrate, a chemopreventive agent, suppresses glutathione S-transferase theta (hGSTT1) and cell growth more in human colon adenoma (LT97) than tumor (HT29) cells. *J Cancer Res Clin Oncol.* 131:692-700.
- Key, T.J., N.E. Allen, E.A. Spencer, and R.C. Travis. 2002. The effect of diet on risk of cancer. *Lancet.* 360:861-8.
- Kiefer, K., J. Clement, P. Garidel, and R. Peschka-Suss. 2004. Transfection efficiency and cytotoxicity of nonviral gene transfer reagents in human smooth muscle and endothelial cells. *Pharm Res.* 21:1009-17.
- Kihara, A.H., A.S. Moriscot, P.J. Ferreira, and D.E. Hamasaki. 2005. Protecting RNA in fixed tissue: an alternative method for LCM users. *J Neurosci Methods.* 148:103-7.
- Kim, O.H., J.H. Lim, K.J. Woo, Y.H. Kim, I.N. Jin, S.T. Han, J.W. Park, and T.K. Kwon. 2004. Influence of p53 and p21Waf1 expression on G2/M phase arrest of colorectal carcinoma HCT116 cells to proteasome inhibitors. *Int J Oncol.* 24:935-41.
- Kim, Y.I. 2000. AGA technical review: impact of dietary fiber on colon cancer occurrence. *Gastroenterology.* 118:1235-57.
- Kimura, M., Y. Mizukami, T. Miura, K. Fujimoto, S. Kobayashi, and M. Matsuzaki. 2001. Orphan G protein-coupled receptor, GPR41, induces apoptosis via a p53/Bax pathway during ischemic hypoxia and reoxygenation. *Journal of Biological Chemistry.* 276:26453-26460.
- Kinzler, K.W., and B. Vogelstein. 1996. Lessons from hereditary colorectal cancer. *Cell.* 87:159-70.
- Klabunde, T., and G. Hessler. 2002. Drug design strategies for targeting G-protein-coupled receptors. 3:928-944.
- Knekt, P., M. Hakama, R. Jarvinen, E. Pukkala, and M. Heliövaara. 1998. Smoking and risk of colorectal cancer. *Br J Cancer.* 78:136-9.
- Kohda, Y., H. Murakami, O.W. Moe, and R.A. Star. 2000. Analysis of segmental renal gene expression by laser capture microdissection. *Kidney Int.* 57:321-31.
- Kritchevsky, D. 1995. Epidemiology of fibre, resistant starch and colorectal cancer. *Eur J Cancer Prev.* 4:345-52.

- Kruh, J. 1982a. Effects of sodium butyrate, a new pharmacological agent, on cells in culture. *Molecular and cellular biochemistry*. 42:65-82.
- Kruh, J. 1982b. Effects of sodium butyrate, a new pharmacological agent, on cells in culture. *Mol Cell Biochem*. 42:65-82.
- Kubista, M., J.M. Andrade, M. Bengtsson, A. Forootan, J. Jonak, K. Lind, R. Sindelka, R. Sjoback, B. Sjogreen, L. Strombom, A. Stahlberg, and N. Zoric. 2006. The real-time polymerase chain reaction. *Mol Aspects Med*. 27:95-125.
- Kune, G.A., S. Kune, and L.F. Watson. 1990. Body weight and physical activity as predictors of colorectal cancer risk. *Nutrition and cancer*. 13:9-17.
- Lai, J.Y., and M.R. Pittelkow. 2004. Culture confluence regulates gene expression of normal human keratinocytes. *Wound Repair Regen*. 12:613-7.
- Lambert, D.W., I.S. Wood, A. Ellis, and S.P. Shirazi-Beechey. 2002. Molecular changes in the expression of human colonic nutrient transporters during the transition from normality to malignancy. *Br J Cancer*. 86:1262-9.
- Lamlum, H., A. Papadopoulou, M. Ilyas, A. Rowan, C. Gillet, A. Hanby, I. Talbot, W. Bodmer, and I. Tomlinson. 2000. APC mutations are sufficient for the growth of early colorectal adenomas. *Proc Natl Acad Sci U S A*. 97:2225-8.
- Lancaster, T., and C. Silagy. 1994. Aspirin and neoplasia of the digestive tract: is there a chemopreventive effect? *Dig Dis*. 12:170-6.
- Larsen, H.H., J.A. Kovacs, F. Stock, V.H. Vestereng, B. Lundgren, S.H. Fischer, and V.J. Gill. 2002. Development of a rapid real-time PCR assay for quantitation of *Pneumocystis carinii* f. sp. *carinii*. *J Clin Microbiol*. 40:2989-93.
- Le Leu, R.K., I.L. Brown, Y. Hu, T. Morita, A. Esterman, and G.P. Young. 2007. Effect of dietary resistant starch and protein on colonic fermentation and intestinal tumorigenesis in rats. *Carcinogenesis*. 28:240-5.
- Le Leu, R.K., I.L. Brown, Y. Hu, and G.P. Young. 2003. Effect of resistant starch on genotoxin-induced apoptosis, colonic epithelium, and lumenal contents in rats. *Carcinogenesis*. 24:1347-52.
- Le Poul, E., C. Loison, S. Struyf, J.Y. Springael, V. Lannoy, M.E. Decobecq, S. Brezillon, V. Dupriez, G. Vassart, J. Van Damme, M. Parmentier, and M. Detheux. 2003. Functional characterization of human receptors for short chain fatty acids and their role in polymorphonuclear cell activation. *Journal of Biological Chemistry*. 278:25481-25489.
- Leavitt, J., J.C. Barrett, B.D. Crawford, and P.O. Ts'o. 1978. Butyric acid suppression of the in vitro neoplastic state of Syrian hamster cells. *Nature*. 271:262-5.
- Leder, A., and P. Leder. 1975. Butyric acid, a potent inducer of erythroid differentiation in cultured erythroleukemic cells. *Cell*. 5:319-22.
- Lehner, B., A.G. Fraser, and C.M. Sanderson. 2004. Technique review: how to use RNA interference. *Brief Funct Genomic Proteomic*. 3:68-83.
- Lekanne Deprez, R.H., A.C. Fijnvandraat, J.M. Ruijter, and A.F. Moorman. 2002. Sensitivity and accuracy of quantitative real-time polymerase chain reaction using SYBR green I depends on cDNA synthesis conditions. *Anal Biochem*. 307:63-9.
- Levy, P., H. Robin, F. Bertrand, M. Kornprobst, and J. Capeau. 2003. Butyrate-treated colonic Caco-2 cells exhibit defective integrin-mediated signaling together with increased apoptosis and differentiation. *Journal of cellular physiology*. 197:336-347.
- Li, H., L. Myeroff, D. Smiraglia, M.F. Romero, T.P. Pretlow, L. Kasturi, J. Lutterbaugh, R.M. Rerko, G. Casey, J.P. Issa, J. Willis, J.K. Willson, C. Plass, and S.D. Markowitz. 2003. SLC5A8, a sodium transporter, is a tumor suppressor gene silenced by methylation in human colon aberrant crypt foci and cancers. *Proc Natl Acad Sci U S A*. 100:8412-7.
- Li, X., H. Luo, S. Paul, T. Tang, and G. Yuan. 2006. Downregulation of the Expression of GLUT1 Plays a Role in Apoptosis Induced by Sodium Butyrate in HT-29 Cell Line. *International journal of molecular sciences*. 7:59-70.
- Liao, B., M. Patel, Y. Hu, S. Charles, D.J. Herrick, and G. Brewer. 2004. Targeted knockdown of the RNA-binding protein CRD-BP promotes cell proliferation via an insulin-like growth factor II-dependent pathway in human K562 leukemia cells. *J Biol Chem*. 279:48716-24.
- Lin, P., and R.D. Ye. 2003. The lysophospholipid receptor G2A activates a specific combination of G proteins and promotes apoptosis. *J Biol Chem*. 278:14379-86.
- Lin, Y.M., Y. Furukawa, T. Tsunoda, C.T. Yue, K.C. Yang, and Y. Nakamura. 2002. Molecular diagnosis of colorectal tumors by expression profiles of 50 genes expressed differentially in adenomas and carcinomas. *Oncogene*. 21:4120-8.

- Lipkin, M., B. Bell, and P. Sherlock. 1963. Cell Proliferation Kinetics in the Gastrointestinal Tract of Man. I. Cell Renewal in Colon and Rectum. *J Clin Invest.* 42:767-76.
- Lipkin, M., B. Reddy, H. Newmark, and S.A. Lamprecht. 1999. Dietary factors in human colorectal cancer. *Annu Rev Nutr.* 19:545-86.
- Litvak, D.A., B.M. Evers, K.O. Hwang, M.R. Hellmich, T.C. Ko, and C.M. Townsend, Jr. 1998. Butyrate-induced differentiation of Caco-2 cells is associated with apoptosis and early induction of p21Waf1/Cip1 and p27Kip1. *Surgery.* 124:161-9; discussion 169-70.
- Liu, Y., and W.F. Bodmer. 2006. Analysis of P53 mutations and their expression in 56 colorectal cancer cell lines. *Proc Natl Acad Sci U S A.* 103:976-81.
- Livak, K.J., and T.D. Schmittgen. 2001. Analysis of relative gene expression data using real-time quantitative PCR and the 2⁻($\Delta\Delta C_T$) Method. *Methods.* 25:402-8.
- Lopez de Silanes, I., N. Olmo, J. Turnay, G. Gonzalez de Buitrago, P. Perez-Ramos, A. Guzman-Aranguel, M. Garcia-Diez, E. Lecona, M. Gorospe, and M.A. Lizarbe. 2004. Acquisition of resistance to butyrate enhances survival after stress and induces malignancy of human colon carcinoma cells. *Cancer Res.* 64:4593-600.
- Lu, L., S. Khan, W. Lencer, and W.A. Walker. 2005. Endocytosis of cholera toxin by human enterocytes is developmentally regulated. *Am J Physiol Gastrointest Liver Physiol.* 289:G332-41.
- Luo, D., and W.M. Saltzman. 2000. Enhancement of transfection by physical concentration of DNA at the cell surface. *Nat Biotechnol.* 18:893-5.
- Luzzi, V., V. Holtschlag, and M.A. Watson. 2001. Expression profiling of ductal carcinoma in situ by laser capture microdissection and high-density oligonucleotide arrays. *Am J Pathol.* 158:2005-10.
- Lynch, H.T., and A. de la Chapelle. 2003. Hereditary colorectal cancer. *N Engl J Med.* 348:919-32.
- Lynch, H.T., T. Smyrk, and J.F. Lynch. 1996. Overview of natural history, pathology, molecular genetics and management of HNPCC (Lynch Syndrome). *Int J Cancer.* 69:38-43.
- Macdonald, I.A., G. Singh, D.E. Mahony, and C.E. Meier. 1978. Effect of pH on bile salt degradation by mixed fecal cultures. *Steroids.* 32:245-56.
- Macheda, M.L., S. Rogers, and J.D. Best. 2005. Molecular and cellular regulation of glucose transporter (GLUT) proteins in cancer. *J Cell Physiol.* 202:654-62.
- Mahyar-Roemer, M., and K. Roemer. 2001. p21 Waf1/Cip1 can protect human colon carcinoma cells against p53-dependent and p53-independent apoptosis induced by natural chemopreventive and therapeutic agents. *Oncogene.* 20:3387-98.
- Manchester, K.L. 1996. Use of UV methods for measurement of protein and nucleic acid concentrations. *Biotechniques.* 20:968-70.
- Marchetti, M.C., G. Migliorati, R. Moraca, C. Riccardi, I. Nicoletti, R. Fabiani, V. Mastrandrea, and G. Morozzi. 1997. Possible mechanisms involved in apoptosis of colon tumor cell lines induced by deoxycholic acid, short-chain fatty acids, and their mixtures. *Nutr Cancer.* 28:74-80.
- Mariadason, J.M., D. Arango, G.A. Corner, M.J. Aranes, K.A. Hotchkiss, W. Yang, and L.H. Augenlicht. 2002. A gene expression profile that defines colon cell maturation in vitro. *Cancer Res.* 62:4791-804.
- Mariadason, J.M., G.A. Corner, and L.H. Augenlicht. 2000a. Genetic reprogramming in pathways of colonic cell maturation induced by short chain fatty acids: comparison with trichostatin A, sulindac, and curcumin and implications for chemoprevention of colon cancer. *Cancer research.* 60:4561-4572.
- Mariadason, J.M., K.L. Rickard, D.H. Barkla, L.H. Augenlicht, and P.R. Gibson. 2000b. Divergent phenotypic patterns and commitment to apoptosis of Caco-2 cells during spontaneous and butyrate-induced differentiation. *J Cell Physiol.* 183:347-54.
- Mariadason, J.M., A. Velcich, A.J. Wilson, L.H. Augenlicht, and P.R. Gibson. 2001. Resistance to butyrate-induced cell differentiation and apoptosis during spontaneous Caco-2 cell differentiation. *Gastroenterology.* 120:889-99.
- Marinissen, M.J., and J.S. Gutkind. 2001. G-protein-coupled receptors and signaling networks: emerging paradigms. *Trends in pharmacological sciences.* 22:368-376.
- McIntyre, A., P.R. Gibson, and G.P. Young. 1993. Butyrate production from dietary fibre and protection against large bowel cancer in a rat model. *Gut.* 34:386-91.
- McKillop, I.H., C.M. Schmidt, P.A. Cahill, and J.V. Sitzmann. 1999. Altered Gq/G11 guanine nucleotide regulatory protein expression in a rat model of hepatocellular carcinoma: role in mitogenesis. *Hepatology.* 29:371-8.

- McNeil, N.I., J.H. Cummings, and W.P. James. 1978. Short chain fatty acid absorption by the human large intestine. *Gut*. 19:819-22.
- Michor, F., Y. Iwasa, C. Lengauer, and M.A. Nowak. 2005. Dynamics of colorectal cancer. *Semin Cancer Biol*. 15:484-93.
- Miller, A.A., E. Kurschel, R. Osieka, and C.G. Schmidt. 1987. Clinical pharmacology of sodium butyrate in patients with acute leukemia. *Eur J Cancer Clin Oncol*. 23:1283-7.
- Miller, T.L., and M.J. Wolin. 1979. Fermentations by saccharolytic intestinal bacteria. *The American Journal of Clinical Nutrition*. 32:164-172.
- Miyashita, T., and J.C. Reed. 1995. Tumor suppressor p53 is a direct transcriptional activator of the human bax gene. *Cell*. 80:293-9.
- Mogal, A., and S.A. Abdulkadir. 2006. Effects of Histone Deacetylase Inhibitor (HDACi); Trichostatin-A (TSA) on the expression of housekeeping genes. *Mol Cell Probes*. 20:81-6.
- Morin, P.J., A.B. Sparks, V. Korinek, N. Barker, H. Clevers, B. Vogelstein, and K.W. Kinzler. 1997. Activation of beta-catenin-Tcf signaling in colon cancer by mutations in beta-catenin or APC. *Science*. 275:1787-90.
- Morrogh, M., N. Olvera, F. Bogomolny, P.I. Borgen, and T.A. King. 2007. Tissue preparation for laser capture microdissection and RNA extraction from fresh frozen breast tissue. *Biotechniques*. 43:41-2, 44, 46 passim.
- Morson, B. 1974. President's address. The polyp-cancer sequence in the large bowel. *Proc R Soc Med*. 67:451-7.
- Mortensen, P.B., H. Hove, M.R. Clausen, and K. Holtug. 1991. Fermentation to short-chain fatty acids and lactate in human faecal batch cultures. Intra- and inter-individual variations versus variations caused by changes in fermented saccharides. *Scand J Gastroenterol*. 26:1285-94.
- Muir, J.G., E.G. Yeow, J. Keogh, C. Pizzey, A.R. Bird, K. Sharpe, K. O'Dea, and F.A. Macrae. 2004. Combining wheat bran with resistant starch has more beneficial effects on fecal indexes than does wheat bran alone. *Am J Clin Nutr*. 79:1020-8.
- Nagata, S. 1994. Apoptosis regulated by a death factor and its receptor: Fas ligand and Fas. *Philos Trans R Soc Lond B Biol Sci*. 345:281-7.
- Nagata, S., and P. Golstein. 1995. The Fas death factor. *Science*. 267:1449-56.
- Nakamura, Y. 1993. The role of the adenomatous polyposis coli (APC) gene in human cancers. *Adv Cancer Res*. 62:65-87.
- Newmark, H.L., J.R. Lupton, and C.W. Young. 1994. Butyrate as a differentiating agent: pharmacokinetics, analogues and current status. *Cancer Lett*. 78:1-5.
- Nilsson, N.E., K. Kotarsky, C. Owman, and B. Olde. 2003. Identification of a free fatty acid receptor, FFA2R, expressed on leukocytes and activated by short-chain fatty acids. *Biochemical and biophysical research communications*. 303:1047-1052.
- Niv, Y., J.C. Byrd, S.B. Ho, R. Dahiya, and Y.S. Kim. 1992. Mucin synthesis and secretion in relation to spontaneous differentiation of colon cancer cells in vitro. *Int J Cancer*. 50:147-52.
- Norat, T., S. Bingham, P. Ferrari, N. Slimani, M. Jenab, M. Mazuir, K. Overvad, A. Olsen, A. Tjonneland, F. Clavel, M.C. Boutron-Ruault, E. Kesse, H. Boeing, M.M. Bergmann, A. Nieters, J. Linseisen, A. Trichopoulou, D. Trichopoulos, Y. Tountas, F. Berrino, D. Palli, S. Panico, R. Tumino, P. Vineis, H.B. Bueno-de-Mesquita, P.H. Peeters, D. Engeset, E. Lund, G. Skeie, E. Ardanaz, C. Gonzalez, C. Navarro, J.R. Quiros, M.J. Sanchez, G. Berglund, I. Mattisson, G. Hallmans, R. Palmqvist, N.E. Day, K.T. Khaw, T.J. Key, M. San Joaquin, B. Hemon, R. Saracci, R. Kaaks, and E. Riboli. 2005. Meat, fish, and colorectal cancer risk: the European Prospective Investigation into cancer and nutrition. *J Natl Cancer Inst*. 97:906-16.
- Norbury, C., and P. Nurse. 1992. Animal cell cycles and their control. *Annu Rev Biochem*. 61:441-70.
- Obrador, A. 2006. Fibre and colorectal cancer: a controversial question. *Br J Nutr*. 96 Suppl 1:S46-8.
- Olmo, N., J. Turnay, E. Lecona, M. Garcia-Diez, B. Llorente, A. Santiago-Gomez, and M.A. Lizarbe. 2007. Acquisition of resistance to butyrate induces resistance to luminal components and other types of stress in human colon adenocarcinoma cells. *Toxicol In Vitro*. 21:254-61.
- Orchel, A., Z. Dzierzewicz, B. Parfiniewicz, L. Weglarz, and T. Wilczok. 2005. Butyrate-induced differentiation of colon cancer cells is PKC and JNK dependent. *Dig Dis Sci*. 50:490-8.

- Palayoor, S.T., M.J. Arayankalayil, A. Shoaibi, and C.N. Coleman. 2005. Radiation sensitivity of human carcinoma cells transfected with small interfering RNA targeted against cyclooxygenase-2. *Clin Cancer Res.* 11:6980-6.
- Parkin, D.M., F. Bray, J. Ferlay, and P. Pisani. 2005. Global cancer statistics, 2002. *CA Cancer J Clin.* 55:74-108.
- Partik, G., K. Hochegger, M. Schorkhuber, and B. Marian. 1999. Inhibition of epidermal-growth-factor-receptor-dependent signalling by tyrphostins A25 and AG1478 blocks growth and induces apoptosis in colorectal tumor cells in vitro. *J Cancer Res Clin Oncol.* 125:379-88.
- Perrin, P., F. Pierre, Y. Patry, M. Champ, M. Berreur, G. Pradal, F. Bornet, K. Meflah, and J. Menanteau. 2001. Only fibres promoting a stable butyrate producing colonic ecosystem decrease the rate of aberrant crypt foci in rats. *Gut.* 48:53-61.
- Persengiev, S.P., X. Zhu, and M.R. Green. 2004. Nonspecific, concentration-dependent stimulation and repression of mammalian gene expression by small interfering RNAs (siRNAs). *Rna.* 10:12-8.
- Pfaffl, M.W. 2001. A new mathematical model for relative quantification in real-time RT-PCR. *Nucleic Acids Res.* 29:e45.
- Pinero, J., M. Lopez-Baena, T. Ortiz, and F. Cortes. 1997. Apoptotic and necrotic cell death are both induced by electroporation in HL60 human promyeloid leukaemia cells. *Apoptosis.* 2:330-6.
- Pinzani, P., C. Orlando, and M. Pazzagli. 2006. Laser-assisted microdissection for real-time PCR sample preparation. *Mol Aspects Med.* 27:140-59.
- Poitout, V. 2003. The ins and outs of fatty acids on the pancreatic beta cell. *Trends Endocrinol Metab.* 14:201-3.
- Potten, C.S., and T.D. Allen. 1977. Ultrastructure of cell loss in intestinal mucosa. *J Ultrastruct Res.* 60:272-7.
- Potten, C.S., and R.J. Morris. 1988. Epithelial stem cells in vivo. *J Cell Sci Suppl.* 10:45-62.
- Potten, C.S., J.W. Wilson, and C. Booth. 1997. Regulation and significance of apoptosis in the stem cells of the gastrointestinal epithelium. *Stem Cells.* 15:82-93.
- Potter, J.D. 1996. Nutrition and colorectal cancer. *Cancer Causes Control.* 7:127-46.
- Potter, J.D. 1999. Colorectal cancer: molecules and populations. *J Natl Cancer Inst.* 91:916-32.
- Potter, J.D. 2003. Epidemiology, cancer genetics and microarrays: making correct inferences, using appropriate designs. *Trends Genet.* 19:690-5.
- Potter, J.D., M.L. Slattery, R.M. Bostick, and S.M. Gapstur. 1993. Colon cancer: a review of the epidemiology. *Epidemiol Rev.* 15:499-545.
- Pouillart, P.R. 1998. Role of butyric acid and its derivatives in the treatment of colorectal cancer and hemoglobinopathies. *Life Sciences.* 63:1739-1760.
- Poumay, Y., and M.R. Pittelkow. 1995. Cell density and culture factors regulate keratinocyte commitment to differentiation and expression of suprabasal K1/K10 keratins. *J Invest Dermatol.* 104:271-6.
- Powell, S.M., N. Zilz, Y. Beazer-Barclay, T.M. Bryan, S.R. Hamilton, S.N. Thibodeau, B. Vogelstein, and K.W. Kinzler. 1992. APC mutations occur early during colorectal tumorigenesis. *Nature.* 359:235-7.
- Rajagopalan, H., M.A. Nowak, B. Vogelstein, and C. Lengauer. 2003. The significance of unstable chromosomes in colorectal cancer. *Nat Rev Cancer.* 3:695-701.
- Reddy, B., A. Engle, S. Katsifis, B. Simi, H.P. Bartram, P. Perrino, and C. Mahan. 1989. Biochemical epidemiology of colon cancer: effect of types of dietary fiber on fecal mutagens, acid, and neutral sterols in healthy subjects. *Cancer Res.* 49:4629-35.
- Reddy, B.S., C. Sharma, B. Simi, A. Engle, K. Laakso, P. Puska, and R. Korpela. 1987. Metabolic epidemiology of colon cancer: effect of dietary fiber on fecal mutagens and bile acids in healthy subjects. *Cancer Res.* 47:644-8.
- Reeves, R. 1992. Chromatin changes during the cell cycle. *Current opinion in cell biology.* 4:413-423.
- Resta-Lenert, S., F. Truong, K.E. Barrett, and L. Eckmann. 2001. Inhibition of epithelial chloride secretion by butyrate: role of reduced adenylyl cyclase expression and activity. *American Journal of Physiology. Cell physiology.* 281:C1837-49.
- Ririe, K.M., R.P. Rasmussen, and C.T. Wittwer. 1997. Product differentiation by analysis of DNA melting curves during the polymerase chain reaction. *Anal Biochem.* 245:154-60.
- Ritzhaupt, A., I.S. Wood, A. Ellis, K.B. Hosie, and S.P. Shirazi-Beechey. 1998. Identification and characterization of a monocarboxylate transporter (MCT1) in pig and human colon: its

- potential to transport L-lactate as well as butyrate. *The Journal of physiology*. 513 (Pt 3):719-732.
- Rodriguez, A.M., B. Perron, L. Lacroix, B. Caillou, G. Leblanc, M. Schlumberger, J.M. Bidart, and T. Pourcher. 2002. Identification and characterization of a putative human iodide transporter located at the apical membrane of thyrocytes. *J Clin Endocrinol Metab*. 87:3500-3.
- Roediger, W.E. 1980. Role of anaerobic bacteria in the metabolic welfare of the colonic mucosa in man. *Gut*. 21:793-8.
- Ropponen, K.M., M.J. Eskelinen, P.K. Lipponen, E. Alhava, and V.M. Kosma. 1997. Prognostic value of tumour-infiltrating lymphocytes (TILs) in colorectal cancer. *J Pathol*. 182:318-24.
- Rubie, C., K. Kempf, J. Hans, T. Su, B. Tilton, T. Georg, B. Brittner, B. Ludwig, and M. Schilling. 2005. Housekeeping gene variability in normal and cancerous colorectal, pancreatic, esophageal, gastric and hepatic tissues. *Mol Cell Probes*. 19:101-9.
- Ruemmele, F.M., S. Dionne, I. Qureshi, D.S. Sarma, E. Levy, and E.G. Seidman. 1999. Butyrate mediates Caco-2 cell apoptosis via up-regulation of pro-apoptotic BAK and inducing caspase-3 mediated cleavage of poly-(ADP-ribose) polymerase (PARP). *Cell Death Differ*. 6:729-35.
- Rumessen, J.J. 1992. Hydrogen and methane breath tests for evaluation of resistant carbohydrates. *Eur J Clin Nutr*. 46 Suppl 2:S77-90.
- Rupnarain, C., Z. Dlamini, S. Naicker, and K. Bhoola. 2004. Colon cancer: genomics and apoptotic events. *Biol Chem*. 385:449-64.
- Sakamoto, J., S. Nakaji, K. Sugawara, S. Iwane, and A. Munakata. 1996. Comparison of resistant starch with cellulose diet on 1,2-dimethylhydrazine-induced colonic carcinogenesis in rats. *Gastroenterology*. 110:116-20.
- Scheppach, W. 1994. Effects of short chain fatty acids on gut morphology and function. *Gut*. 35:S35-8.
- Scheppach, W., H.P. Bartram, and F. Richter. 1995. Role of short-chain fatty acids in the prevention of colorectal cancer. *European journal of cancer*. 31A:1077-1080.
- Scheppach, W., P. Bartram, A. Richter, F. Richter, H. Liepold, G. Dusel, G. Hofstetter, J. Ruthlein, and H. Kasper. 1992. Effect of short-chain fatty acids on the human colonic mucosa in vitro. *JPEN J Parenter Enteral Nutr*. 16:43-8.
- Scheppach, W., C. Fabian, M. Sachs, and H. Kasper. 1988. The effect of starch malabsorption on fecal short-chain fatty acid excretion in man. *Scand J Gastroenterol*. 23:755-9.
- Schmitt, C.A., and S.W. Lowe. 1999. Apoptosis and therapy. *J Pathol*. 187:127-37.
- Schmittgen, T.D., and B.A. Zakrajsek. 2000. Effect of experimental treatment on housekeeping gene expression: validation by real-time, quantitative RT-PCR. *J Biochem Biophys Methods*. 46:69-81.
- Schroeder, A., O. Mueller, S. Stocker, R. Salowsky, M. Leiber, M. Gassmann, S. Lightfoot, W. Menzel, M. Granzow, and T. Ragg. 2006. The RIN: an RNA integrity number for assigning integrity values to RNA measurements. *BMC Mol Biol*. 7:3.
- Schwartz, B., C. Avivi-Green, and S. Polak-Charcon. 1998. Sodium butyrate induces retinoblastoma protein dephosphorylation, p16 expression and growth arrest of colon cancer cells. *Mol Cell Biochem*. 188:21-30.
- Selvakumaran, M., H.K. Lin, T. Miyashita, H.G. Wang, S. Krajewski, J.C. Reed, B. Hoffman, and D. Liebermann. 1994. Immediate early up-regulation of bax expression by p53 but not TGF beta 1: a paradigm for distinct apoptotic pathways. *Oncogene*. 9:1791-8.
- Semizarov, D., L. Frost, A. Sarthy, P. Kroeger, D.N. Halbert, and S.W. Fesik. 2003. Specificity of short interfering RNA determined through gene expression signatures. *Proc Natl Acad Sci U S A*. 100:6347-52.
- Senga, T., S. Iwamoto, T. Yoshida, T. Yokota, K. Adachi, E. Azuma, M. Hamaguchi, and T. Iwamoto. 2003. LSSIG is a novel murine leukocyte-specific GPCR that is induced by the activation of STAT3. *Blood*. 101:1185-7.
- Sengupta, S., J.G. Muir, and P.R. Gibson. 2006. Does butyrate protect from colorectal cancer? *J Gastroenterol Hepatol*. 21:209-18.
- Sharp, P.A. 2001. RNA interference--2001. *Genes Dev*. 15:485-90.
- Sherr, C.J. 1996. Cancer cell cycles. *Science*. 274:1672-7.
- Shibata, D., D. Hawes, Z.H. Li, A.M. Hernandez, C.H. Spruck, and P.W. Nichols. 1992. Specific genetic analysis of microscopic tissue after selective ultraviolet radiation fractionation and the polymerase chain reaction. *Am J Pathol*. 141:539-43.

- Siavoshian, S., H.M. Blottiere, E. Le Foll, B. Kaeffer, C. Cherbut, and J.P. Galmiche. 1997. Comparison of the effect of different short chain fatty acids on the growth and differentiation of human colonic carcinoma cell lines in vitro. *Cell Biol Int.* 21:281-7.
- Siavoshian, S., J.P. Segain, M. Kornprobst, C. Bonnet, C. Cherbut, J.P. Galmiche, and H.M. Blottiere. 2000. Butyrate and trichostatin A effects on the proliferation/differentiation of human intestinal epithelial cells: induction of cyclin D3 and p21 expression. *Gut.* 46:507-14.
- Singh, B., A.P. Halestrap, and C. Paraskeva. 1997. Butyrate can act as a stimulator of growth or inducer of apoptosis in human colonic epithelial cell lines depending on the presence of alternative energy sources. *Carcinogenesis.* 18:1265-70.
- Smith-Barbaro, P., D. Hanson, and B.S. Reddy. 1981. Carcinogen binding to various types of dietary fiber. *J Natl Cancer Inst.* 67:495-7.
- Smith, J.G., W.H. Yokoyama, and J.B. German. 1998. Butyric acid from the diet: actions at the level of gene expression. *Crit Rev Food Sci Nutr.* 38:259-97.
- Sparks, A.B., P.J. Morin, B. Vogelstein, and K.W. Kinzler. 1998. Mutational analysis of the APC/beta-catenin/Tcf pathway in colorectal cancer. *Cancer Res.* 58:1130-4.
- Stadel, J.M., S. Wilson, and D.J. Bergsma. 1997. Orphan G protein-coupled receptors: a neglected opportunity for pioneer drug discovery. *Trends Pharmacol Sci.* 18:430-7.
- Stahlberg, A., P. Aman, B. Ridell, P. Mostad, and M. Kubista. 2003. Quantitative real-time PCR method for detection of B-lymphocyte monoclonality by comparison of kappa and lambda immunoglobulin light chain expression. *Clin Chem.* 49:51-9.
- Stahlberg, A., J. Hakansson, X. Xian, H. Semb, and M. Kubista. 2004a. Properties of the reverse transcription reaction in mRNA quantification. *Clin Chem.* 50:509-15.
- Stahlberg, A., M. Kubista, and M. Pfaffl. 2004b. Comparison of reverse transcriptases in gene expression analysis. *Clin Chem.* 50:1678-80.
- Stark, G.R., I.M. Kerr, B.R. Williams, R.H. Silverman, and R.D. Schreiber. 1998. How cells respond to interferons. *Annu Rev Biochem.* 67:227-64.
- Stein, J., M. Zores, and O. Schroder. 2000. Short-chain fatty acid (SCFA) uptake into Caco-2 cells by a pH-dependent and carrier mediated transport mechanism. *Eur J Nutr.* 39:121-5.
- Stephen, A.M., and J.H. Cummings. 1980. Mechanism of action of dietary fibre in the human colon. *Nature.* 284:283-4.
- Stephen, A.M., A.C. Haddad, and S.F. Phillips. 1983. Passage of carbohydrate into the colon. Direct measurements in humans. *Gastroenterology.* 85:589-95.
- Stokrova, J., E. Sloncova, V. Sovova, D. Kucerova, V. Zila, J. Tureckova, M. Vojtechova, J. Korb, and Z. Tuhackova. 2006. Characterization of four clones derived from human adenocarcinoma cell line, HT29, and analysis of their response to sodium butyrate. *Int J Oncol.* 28:559-65.
- Stokrova, J., V. Sovova, E. Sloncova, and J. Korb. 1999. Different morphological changes of two colorectal adenocarcinoma cell lines after sodium butyrate treatment. *Int J Mol Med.* 4:669-74.
- Stokrova, J., V. Sovova, E. Sloncova, D. Kucerova, Z. Tuhackova, and J. Korb. 2005. Response of HT115, a highly invasive human colorectal adenocarcinoma cell line, to sodium butyrate treatment and glucose deprivation. *Int J Oncol.* 26:793-9.
- Su, H.W., H.H. Yeh, S.W. Wang, M.R. Shen, T.L. Chen, P.R. Kiela, F.K. Ghishan, and M.J. Tang. 2007. Cell confluence-induced activation of signal transducer and activator of transcription-3 (Stat3) triggers epithelial dome formation via augmentation of sodium hydrogen exchanger-3 (NHE3) expression. *J Biol Chem.* 282:9883-94.
- Sugiyama, Y., B. Farrow, C. Murillo, J. Li, H. Watanabe, K. Sugiyama, and B.M. Evers. 2005. Analysis of differential gene expression patterns in colon cancer and cancer stroma using microdissected tissues. *Gastroenterology.* 128:480-6.
- Svaren, J., and R. Chalkley. 1990. The structure and assembly of active chromatin. *Trends in genetics : TIG.* 6:52-56.
- Svennevig, J.L., O.C. Lunde, J. Holter, and D. Bjorgsvik. 1984. Lymphoid infiltration and prognosis in colorectal carcinoma. *Br J Cancer.* 49:375-7.
- Tabuchi, Y., Y. Arai, T. Kondo, N. Takeguchi, and S. Asano. 2002. Identification of genes responsive to sodium butyrate in colonic epithelial cells. *Biochem Biophys Res Commun.* 293:1287-94.
- Tabuchi, Y., I. Takasaki, T. Doi, Y. Ishii, H. Sakai, and T. Kondo. 2006. Genetic networks responsive to sodium butyrate in colonic epithelial cells. *FEBS Lett.* 580:3035-41.

- Takemoto, N., F. Konishi, K. Yamashita, M. Kojima, T. Furukawa, Y. Miyakura, K. Shitoh, and H. Nagai. 2004. The correlation of microsatellite instability and tumor-infiltrating lymphocytes in hereditary non-polyposis colorectal cancer (HNPCC) and sporadic colorectal cancers: the significance of different types of lymphocyte infiltration. *Jpn J Clin Oncol.* 34:90-8.
- Tan, H.T., R.M. Zubaidah, S. Tan, S.C. Hooi, and M.C. Chung. 2006. 2-D DIGE analysis of butyrate-treated HCT-116 cells after enrichment with heparin affinity chromatography. *J Proteome Res.* 5:1098-106.
- Tan, S., T.K. Seow, R.C. Liang, S. Koh, C.P. Lee, M.C. Chung, and S.C. Hooi. 2002. Proteome analysis of butyrate-treated human colon cancer cells (HT-29). *International journal of cancer. Journal international du cancer.* 98:523-531.
- Tanski, W.J., E. Roztocil, E.A. Hemady, J.A. Williams, and M.G. Davies. 2004. Role of Galphaq in smooth muscle cell proliferation. *Journal of vascular surgery : official publication, the Society for Vascular Surgery [and] International Society for Cardiovascular Surgery, North American Chapter.* 39:639-644.
- Thornton, J.R. 1981. High colonic pH promotes colorectal cancer. *Lancet.* 1:1081-3.
- Topping, D.L., and P.M. Clifton. 2001. Short-chain fatty acids and human colonic function: roles of resistant starch and nonstarch polysaccharides. *Physiol Rev.* 81:1031-64.
- Toscani, A., D.R. Soprano, and K.J. Soprano. 1988. Molecular analysis of sodium butyrate-induced growth arrest. *Oncogene research.* 3:223-238.
- Trejo, J., S.R. Hammes, and S.R. Coughlin. 1998. Termination of signaling by protease-activated receptor-1 is linked to lysosomal sorting. *Proc Natl Acad Sci U S A.* 95:13698-702.
- Trock, B., E. Lanza, and P. Greenwald. 1990. Dietary fiber, vegetables, and colon cancer: critical review and meta-analyses of the epidemiologic evidence. *J Natl Cancer Inst.* 82:650-61.
- Trowell, H., and D. Burkitt. 1986. Physiological role of dietary fiber: a ten-year review. *ASDC J Dent Child.* 53:444-7.
- Tsao, D., Z.R. Shi, A. Wong, and Y.S. Kim. 1983. Effect of sodium butyrate on carcinoembryonic antigen production by human colonic adenocarcinoma cells in culture. *Cancer Res.* 43:1217-22.
- Tschaharganeh, D., V. Ehemann, T. Nussbaum, P. Schirmacher, and K. Breuhahn. 2007. Non-specific effects of siRNAs on tumor cells with implications on therapeutic applicability using RNA interference. *Pathol Oncol Res.* 13:84-90.
- Turner, P.R., S. Mefford, S. Christakos, and R.A. Nissenson. 2000. Apoptosis mediated by activation of the G protein-coupled receptor for parathyroid hormone (PTH)/PTH-related protein (PTHrP). *Mol Endocrinol.* 14:241-54.
- Tyagi, S., J. Venugopalakrishnan, K. Ramaswamy, and P.K. Dudeja. 2002. Mechanism of n-butyrate uptake in the human proximal colonic basolateral membranes. *Am J Physiol Gastrointest Liver Physiol.* 282:G676-82.
- Upton, J.J., R. Stoyanova, H.S. Cooper, C. Patriotis, E.A. Ross, B. Boman, M.L. Clapper, A.G. Knudson, and A. Bellacosa. 2004. Optimized procedures for microarray analysis of histological specimens processed by laser capture microdissection. *J Cell Physiol.* 201:366-73.
- Valenti, M.T., F. Bertoldo, L. Dalle Carbonare, G. Azzarello, S. Zenari, M. Zanatta, E. Balducci, O. Vinante, and V. Lo Cascio. 2006. The effect of bisphosphonates on gene expression: GAPDH as a housekeeping or a new target gene? *BMC Cancer.* 6:49.
- Vecsey-Semjen, B., K.F. Becker, A. Sinski, E. Blennow, I. Vietor, K. Zatloukal, H. Beug, E. Wagner, and L.A. Huber. 2002. Novel colon cancer cell lines leading to better understanding of the diversity of respective primary cancers. *Oncogene.* 21:4646-62.
- Velazquez, O.C., and J.L. Rombeau. 1997. Butyrate. Potential role in colon cancer prevention and treatment. *Advances in Experimental Medicine and Biology.* 427:169-181.
- Venturi, M., R.J. Hambly, B. Glinghammar, J.J. Rafter, and I.R. Rowland. 1997. Genotoxic activity in human faecal water and the role of bile acids: a study using the alkaline comet assay. *Carcinogenesis.* 18:2353-9.
- Vickers, T.A., S. Koo, C.F. Bennett, S.T. Crooke, N.M. Dean, and B.F. Baker. 2003. Efficient reduction of target RNAs by small interfering RNA and RNase H-dependent antisense agents. A comparative analysis. *J Biol Chem.* 278:7108-18.
- Vidali, G., L.C. Boffa, E.M. Bradbury, and V.G. Allfrey. 1978. Butyrate suppression of histone deacetylation leads to accumulation of multiacetylated forms of histones H3 and H4 and increased DNase I sensitivity of the associated DNA sequences. *Proceedings of the National Academy of Sciences of the United States of America.* 75:2239-2243.

- Vincent, V.A., J.J. DeVoss, H.S. Ryan, and G.M. Murphy, Jr. 2002. Analysis of neuronal gene expression with laser capture microdissection. *J Neurosci Res.* 69:578-86.
- Violette, S., L. Poulain, E. Dussaulx, D. Pepin, A.M. Faussat, J. Chambaz, J.M. Lacorte, C. Staedel, and T. Lesuffleur. 2002. Resistance of colon cancer cells to long-term 5-fluorouracil exposure is correlated to the relative level of Bcl-2 and Bcl-X(L) in addition to Bax and p53 status. *International journal of cancer. Journal internationale du cancer.* 98:498-504.
- Vogelstein, B., E.R. Fearon, S.R. Hamilton, S.E. Kern, A.C. Preisinger, M. Leppert, Y. Nakamura, R. White, A.M. Smits, and J.L. Bos. 1988. Genetic alterations during colorectal-tumor development. *N Engl J Med.* 319:525-32.
- Vogelstein, B., and K.W. Kinzler. 1992. p53 function and dysfunction. *Cell.* 70:523-6.
- Wachtershauser, A., and J. Stein. 2000. Rationale for the luminal provision of butyrate in intestinal diseases. *Eur J Nutr.* 39:164-71.
- Wang, S.W., K. Parhar, K.J. Chiu, A. Tran, P. Gangaiti, J. Kong, M. Gonzalez, B. Salh, V. Duronio, U.P. Steinbrecher, and A. Gomez-Munoz. 2007. Pertussis toxin promotes macrophage survival through inhibition of acid sphingomyelinase and activation of the phosphoinositide 3-kinase/protein kinase B pathway. *Cell Signal.* 19:1772-83.
- Wang, Y., L. Szekely, I. Okan, G. Klein, and K.G. Wiman. 1993. Wild-type p53-triggered apoptosis is inhibited by bcl-2 in a v-myc-induced T-cell lymphoma line. *Oncogene.* 8:3427-31.
- Wargovich, M.J., A.R. Baer, P.J. Hu, and H. Sumiyoshi. 1988. Dietary factors and colorectal cancer. *Gastroenterol Clin North Am.* 17:727-45.
- Wasan, H.S., and R.A. Goodlad. 1996. Fibre-supplemented foods may damage your health. *Lancet.* 348:319-20.
- Whetsell, L., G. Maw, N. Nadon, D.P. Ringer, and F.V. Schaefer. 1992. Polymerase chain reaction microanalysis of tumors from stained histological slides. *Oncogene.* 7:2355-61.
- Whitehead, R.H., G.P. Young, and P.S. Bhathal. 1986. Effects of short chain fatty acids on a new human colon carcinoma cell line (LIM1215). *Gut.* 27:1457-63.
- Willett, W.C., M.J. Stampfer, G.A. Colditz, B.A. Rosner, and F.E. Speizer. 1990. Relation of meat, fat, and fiber intake to the risk of colon cancer in a prospective study among women. *N Engl J Med.* 323:1664-72.
- Williams, E.A., J.M. Coxhead, and J.C. Mathers. 2003. Anti-cancer effects of butyrate: use of micro-array technology to investigate mechanisms. *Proc Nutr Soc.* 62:107-15.
- Wong, M.L., and J.F. Medrano. 2005. Real-time PCR for mRNA quantitation. *Biotechniques.* 39:75-85.
- Wong, Z.M., B. Choo, M. Li, D.J. Carey, D.F. Cano-Gauci, and R.N. Buick. 1998. Syndecan-1 is up-regulated in ras-transformed intestinal epithelial cells. *Br J Cancer.* 77:890-6.
- Wu, J.T., S.Y. Archer, B. Hinnebusch, S. Meng, and R.A. Hodin. 2001. Transient vs. prolonged histone hyperacetylation: effects on colon cancer cell growth, differentiation, and apoptosis. *Am J Physiol Gastrointest Liver Physiol.* 280:G482-90.
- Xiong, Y., N. Miyamoto, K. Shibata, M.A. Valasek, T. Motoike, R.M. Kedzierski, and M. Yanagisawa. 2004. Short-chain fatty acids stimulate leptin production in adipocytes through the G protein-coupled receptor GPR41. *Proceedings of the National Academy of Sciences of the United States of America.* 101:1045-1050.
- Yamamoto, T., Y. Seino, H. Fukumoto, G. Koh, H. Yano, N. Inagaki, Y. Yamada, K. Inoue, T. Manabe, and H. Imura. 1990. Over-expression of facilitative glucose transporter genes in human cancer. *Biochem Biophys Res Commun.* 170:223-30.
- Yang, J.J., J.S. Kang, and R.S. Krauss. 1998. Ras signals to the cell cycle machinery via multiple pathways to induce anchorage-independent growth. *Mol Cell Biol.* 18:2586-95.
- Yin, J.L., N.A. Shackel, A. Zekry, P.H. McGuinness, C. Richards, K.V. Putten, G.W. McCaughan, J.M. Eris, and G.A. Bishop. 2001. Real-time reverse transcriptase-polymerase chain reaction (RT-PCR) for measurement of cytokine and growth factor mRNA expression with fluorogenic probes or SYBR Green I. *Immunol Cell Biol.* 79:213-21.
- Yonezawa, T., Y. Kobayashi, and Y. Obara. 2006. Short-chain fatty acids induce acute phosphorylation of the p38 mitogen-activated protein kinase/heat shock protein 27 pathway via GPR43 in the MCF-7 human breast cancer cell line. *Cell Signal.*
- Young, G.P., Y. Hu, R.K. Le Leu, and L. Nyskohus. 2005. Dietary fibre and colorectal cancer: a model for environment-gene interactions. *Mol Nutr Food Res.* 49:571-84.

- Yuen, T., E. Wurmbach, R.L. Pfeffer, B.J. Ebersole, and S.C. Sealfon. 2002. Accuracy and calibration of commercial oligonucleotide and custom cDNA microarrays. *Nucleic Acids Res.* 30:e48.
- Zhang, J., and C.D. Byrne. 1999. Differential priming of RNA templates during cDNA synthesis markedly affects both accuracy and reproducibility of quantitative competitive reverse-transcriptase PCR. *Biochem J.* 337 (Pt 2):231-41.
- Zhou, S., H. Zhou, P.J. Walian, and B.K. Jap. 2005. CD147 is a regulatory subunit of the gamma-secretase complex in Alzheimer's disease amyloid beta-peptide production. *Proc Natl Acad Sci U S A.* 102:7499-504.
- Zhuang, Z., P. Bertheau, M.R. Emmert-Buck, L.A. Liotta, J. Gnarra, W.M. Linehan, and I.A. Lubensky. 1995. A microdissection technique for archival DNA analysis of specific cell populations in lesions < 1 mm in size. *Am J Pathol.* 146:620-5.
- Zoran, D.L., N.D. Turner, S.S. Taddeo, R.S. Chapkin, and J.R. Lupton. 1997. Wheat bran diet reduces tumor incidence in a rat model of colon cancer independent of effects on distal luminal butyrate concentrations. *J Nutr.* 127:2217-25.