9 Literaturverzeichnis

Aderem, A. (1992).
The MARCKS brothers: a family of protein kinase C substrates. Cell 71, 713-716.

Alaiya, A.A.; Franzen, B.; Fujioka, K.; Moberger, B.; Schedvins, K.; Silfversvard, C.; Linder, S.; Auer, G. (1997).
Phenotypic analysis of ovarian carcinoma: polypeptide expression in benign, borderline and malignant tumors. Int. J. Cancer., 73(5), 678-683.

Alldridge, L.C.; Harris, H.J.; Plevin, R.; Hannon, R.; Bryant, C.E. (1999).
The annexin protein lipocortin 1 regulates the MAPK/ERK pathway. J. Biol. Chem., 274(53), 37620-37628.

Alon, U.; Barkai, N.; Notterman, D. A.; Gish, K.; Ybarra, S.; Mack, D.; Levine, A. J. (1999).
Broad patterns of gene expression revealed by clustering analysis of tumor and normal colon tissues probed by oligonucleotide arrays. Cell Biology, 96 (12), 6745-6750.

Anderson, L.; Seilhamer, J. (1997).
A comparison of selected mRNA and protein abundances in human liver. Electrophoresis, 18 (3-4), 533-537.

Anderson, N. G.; Anderson, L. (1996).
Twenty years of two-dimensional electrophoresis: past, present and future. Electrophoresis 17, 443–453.

Arnheim, N.; Erlich, H. (1992).
Polymerase chain reaction strategy. Annu. Rev. Biochem. 61,131-156.

Assert, R.; Schatz, H.; Pfeiffer, A. (1996).
Upregulation of PKC delta- and downregulation of PKC alpha-mRNA and protein by phorbol ester in human T84 cells. FEBS Lett., 388(2-3), 195-199.

Baudier, J.; Delphin, C.; Grunwald, D.; Khochbin, S. and Lawrence, J. J. (1992).
Characterization of the tumor suppressor protein p53 as a protein kinase C substrate and a S100b-binding protein. Proc. Natl. Acad. Sci. USA 89, 11627-11631.

Begemann, M.; Kashimawo, S.A.; Lunn, R.M.; Delohery, T.; Choi, Y.J.; Kim, S.; Heitjan, D.F.; Santella, R.M.; Schiff, P.B.; Bruce, J.N. (1998).
Growth inhibition induced by Ro 31-8220 and calphostin C in human glioblastoma cell lines is associated with apoptosis and inhibition of CDC2 kinase. Anticancer Res., (5A), 3139-3152.

Belka, C.; Ahlers, A.; Sott, C.; Gaestel, M.; Herrmann, F.; Brach, M.A. (1995).
Interleukin (IL)-6 signaling leads to phosphorylation of the small heat shock protein (Hsp)27 through activation of the MAP kinase and MAPKAP kinase 2 pathway in monocytes and monocytic leukemia cells. Leukemia, 9(2), 288-294.

Ben-Levy, R.; Hooper, S.; Wilson, R.; Paterson, H.F.; Marshall, C.J. (1998).
Nuclear export of the stress-activated protein kinase p38 mediated by its substrate

MAPKAP kinase-2. Curr. Biol., 8(19), 1049-1057.

Blackshear, P. J. (1993).
The MARCKS family of cellular protein kinase C substrates. J. Biol. Chem. 268, 1501-1504.

Bohm, H.; Benndorf, R.; Gaestel, M.; Gross, B.; Nurnberg, P.; Kraft, R.; Otto, A.; Bielka, H. (1989).
The growth-related protein P23 of the Ehrlich ascites tumor: translationell control, cloning and primary structure. Biochem. Int., 19(2), 277-286.

Borner C, Guadagno SN, Fabbro D, Weinstein IB. (1992).
Expression of four protein kinase C isoforms in rat fibroblasts. Distinct subcellular distribution and regulation by calcium and phorbol esters. J. Biol. Chem., 267(18), 12892-12899.

Borner, C.; Guadagno, S.N.; Fabbro, D.; Weinstein, I.B. (1992).
Expression of four protein kinase C isoforms in rat fibroblasts. Distinct subcellular distribution and regulation by calcium and phorbol esters. J. Biol. Chem., 267(18), 12892-12899.

Bradford, M. M. (1976).
A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. Anal. Biochem., 72, 248-254.

Braxton, S.; Bedilion, T. (1998).
The integration of microarray information in the drug development process. Curr. Opin. Biotechnol., 9(6),643-649.

Buccione, R.; Bannykh, S.; Santone, I.; Baldassarre, M.; Facciano, F.; Bozzi, Y.; Di Tullo, G.; Mironov, A.; Luini, A. & De Matteis, M. A. (1996).
Regulation of constitutive exocytic transport by membrane receptors. A biochemical and morphometric study. J. Biol. Chem., 271, 3523 – 3533.

Burns, D.J.; Bell, R.M. (1991).
Protein kinase C contains two phorbol ester binding domains. J. Biol. Chem., 266(27), 18330-18338.

Canaider, S.; Solito, E.; de Coupade, C.; Flower, R.J.; Russo-Marie, F.; Goulding, N.J.; Perretti, M. (2000).
Increased apoptosis in U937 cells over-expressing lipocortin 1 (annexin I). Life Sci., 66(18), 265-270.

Casale, T.B.; Abbas, M.K. (1990).
Comparison of leukotriene B4-induced neutrophil migration through different cellular barriers. Am. J. Physiol. 258(4 Pt 1), C639-647.

Castagna M., Takai Y., Kaibuchi K., Sano K., Kikkawa U. and Nishizuka Y. (1982)
Direct activation of calcium-activated, phospholipid-dependent protein kinase by tumor-promoting phorbol esters. J. Biol. Chem. 257, 7847-7851.

Cazaubon, S.; Bornancin, F.; Parker, P.J. (1994).
Threonine-497 is a critical site for permissive activation of protein kinase C alpha.

Biochem J., 301, (Pt 2), 443-448.

Cheng, T.J.; Lai, Y.K. (1998).
Identification of mitogen-activated protein kinase-activated protein kinase-2 as a vimentin kinase activated by okadaic acid in 9L rat brain tumor cells. J. Cell Biochem., 71(2),169-181.

Chevalier, D.; Allen, B.G. (2000).
Two distinct forms of MAPKAP kinase-2 in adult cardiac ventricular myocytes. Biochemistry, 23;39(20), 6145-6156.

Chitpatima, S.T.; Makrides, S.; Bandyopadhyay, R.; Brawerman, G. (1988).
Nucleotide sequence of a major messenger RNA for a 21 kilodalton polypeptide that is under translationell control in mouse tumor cells. Nucleic. Acids Res., 16(5), 2350.

Chung, S.; Kim, M.; Choi, W.; Chung, J.; Lee, K. (2000).
Expression of translationellly controlled tumor protein mRNA in human colon cancer. Cancer. Lett., 156(2), 185-190.

Correas, I.; Diaz-Nido, J., and Avila, J. (1992).
Microtubule-associated protein tau is phosphorylated by protein kinase C on its tubulin binding domain. J. Biol. Chem. 267, 15721-15728.

Coussens, L.; Parker, P.J.; Rhee, L.; Yang-Feng, T.L.; Chen, E.; Waterfield, M.D.; Francke, U.; Ullrich, A. (1986).
Multiple, distinct forms of bovine and human protein kinase C suggest diversity in cellular signaling pathways. Science, 233(4766), 859-866.

Cronin, M.T.; Fucini, R.V.; Kim, S.M.; Masino, R.S.; Wespi, R.M.; Miyada, C.G. (1996).
Cystic fibrosis mutation detection by hybridization to light-generated DNA probe arrays. Hum. Mutat., 7(3), 244-255.

Dammeier, S. (1999).
Identifizierung von Substraten der Proteinkinase C-Enzymfamilie. Dissertation zur Erlangung des Doktorgrades an der Fakultät für Chemie und Pharmazie der Ludwig-Maximilians-Universität München.

Denning, M. F., Kazanietz, M. G., Blumberg, P. M. and Yuspa, S.H. (1995)
Cholesterol sulfate activates multiple protein kinase C isoenzymes and induces granular cell differentiation in cultured murine keratinocytes. Cell Growth Differ. 6, 1619-1626.

Dlugosz, A.A.; Mischak, H.; Mushinski, J.F.; Yuspa, S.H. (1992).
Transcripts encoding protein kinase C-alpha, -delta, -epsilon, -zeta, and -eta are expressed in basal and differentiating mouse keratinocytes in vitro and exhibit quantitative changes in neoplastic cells. Mol. Carcinog, 5 (4), 286-292 .

Donelle-Deana, A.; James, P.; Staudenmann, W.; Cesaro, L.; Marin, O.; Brunati, A.M.; Ruzzene, M.; Pinna, L.A. (1996).
Isolation from spleen of a 57-kDa protein substate of the tyrosine kinase Lyn. Identification as a protein related to protein disulfide-isomerase and localisation of the phosphorylation sites. Eur. J. Biochem., 235, 18-25.

Engel, K.; Ahlers, A.; Brach, M.A.; Herrmann, F.; Gaestel, M. (1995b).

MAPKAP kinase 2 is activated by heat shock and TNF-alpha: in vivo phosphorylation of small heat shock protein results from stimulation of the MAP kinase cascade. J. Cell Biochem., 57(2), 321-330.

Engel, K.; Schultz, H.; Martin, F.; Kotlyarov, A.; Plath, K.; Hahn, M.; Heinemann, U.; Gaestel, M. (1995a).
Constitutive activation of mitogen-activated protein kinase-activated protein kinase 2 by mutation of phosphorylation sites and an A-helix motif. J. Biol. Chem., 270(45), 27213-27221.

Ferguson, J.A.; Boles, T.C.; Adams, C.P., Walt, D.R. (1996).
A fiber-optic DNA biosensor microarray for the analysis of gene expression. Nat. Biotechnol., 14(13), 1681-1684.

Fodor, S.P.; Read, J.L.; Pirrung, M.C.; Stryer, L.; Lu, A.T.; Solas, D. (1991).
Light-directed, spatially addressable parallel chemical synthesis. Science, 251(4995), 767-773.

Foltz, I.N.; Lee, J.C.; Young, P.R.; Schrader, J.W. (1997).
Hemopoietic growth factors with the exception of interleukin-4 activate the p38 mitogen-activated protein kinase pathway. J. Biol. Chem., 272(6), 3296-3301.

Franzen, B.; Auer, G.; Alaiya, A.A.; Eriksson, E.; Uryu, K.; Hirano, T.; Okuzawa, K.; Kato, H.; Linder, S. (1996).
Assessment of homogeneity in polypeptide expression in breast carcinomas shows widely variable expression in highly malignant tumors. Int. J. Cancer., 69(5), 408-414.

Fulton, R.J.; McDade, R.L.; Smith, P.L.; Kienker, L.J.; Kettman, J.R. Jr. (1997).
Advanced multiplexed analysis with the FlowMetrix system. Clin. Chem., 43(9),1749-1756.

Goffeau, A.; Barrell, B.G.; Bussey, H.; Davis, R.W.; Dujon, B.; Feldmann, H.; Galibert, F.; Hoheisel, J.D.; Jacq, C.; Johnston, M.; Louis, E.J.; Mewes, H.W.; Murakami, Y.; Philippsen, P.; Tettelin, H.; Oliver, S,G. (1996).
Life with 6000 genes. Science, 274(5287), 563-567.

Golub, T.R.; Slonim, D.K.; Tamayo, P.; Huard, C.; Gaasenbeek, M.; Mesirov, J.P.; Coller, H.; Loh, M.L.; Downing, J.R.; Caligiuri, M.A.; Bloomfield, C.D.; Lander, E.S. (1999).
Molecular classification of cancer: class discovery and class prediction by gene expression monitoring. Science, 286(5439), 531-537.

Goode, N.; Hughes, K.; Woodgett, J. R.; Parker, P. J. (1992).
Differential regulation of glycogen synthase kinase-3 beta by protein kinase C isotypes. J. Biol. Chem. 267, 16878-16882.

Goode, N.T.; Hajibagheri, M.A.; Parker, P.J. (1995).
Protein kinase C (PKC)-induced PKC down-regulation. Association with up-regulation of vesicle traffic. J. Biol. Chem., 270(6), 2669-2673.

Goodnight, J., Mischak, H., and Mushinski, J. F. (1994)
Selective involvement of Protein kinase C isozymes in differentiation and neoplastic transformation. Adv. in Cancer Res. 64, 159-209.

Gosh, S., and Baltimore, D. (1990)
Activation in vitro of NF-kB by phosphorylation of its inhibitor IκB. Nature 344, 678-682.

Greenberger, J. S.; Sakakeeny, M. A.; Humphries, R. K.; Eaves, C. J.; Eckner, R. J. (1983).
Demonstration of permanent factor-dependent multipotential (erythroid/ neutrophil/basophil) hematopoietic progenitor cell lines.Proc. Natl. Acad. Sci. 80, 2931-2935.

Gygi, S.P.; Rochon, Y.; Franza, B.R.; Aebersold, R. (1999).
Correlation between protein and mRNA abundance in yeast. Mol. Cell Biol., 19(3), 1720-1730.

Hacia, J.G.; Brody, L.C.; Chee, M.S.; Fodor, S.P.; Collins, F.S. (1996).
Detection of heterozygous mutations in BRCA1 using high density oligonucleotide arrays and two-colour fluorescence analysis. Nat. Genet., 14(4), 441-447.

Hall, F. L., Fernyhough, P., Ishii, D. N., and Vuillet, P. R. (1988).
Suppression of nerve growth factor-directed neurite outgrowth in PC-12 cells by sphingosine, an inhibitor of protein kinase C. J. Biol. Chem. 263, 4460-4466.

Han, J.; Lee, J.D.; Bibbs, L.; Ulevitch, R.J. (1994)
A MAP kinase targeted by endotoxin and hyperosmolarity in mammalian cells. Science, 265(5173), 808-811.

Hardie, R.C.; Peretz, A.; Suss-Toby, E.; Rom-Glas, A.; Bishop, S.A.; Selinger, Z.; Minke, B.
(1998). Protein kinase C is required for light adaptation in Drosophila photoreceptors. Nature, 363(6430), 634-637.

Hartwig, J.H.; Thelen, M.; Rosen, A.; Janmey, P.A.; Nairn, A.C.; Aderem, A. (1992).
MARCKS is an actin filament crosslinking protein regulated by protein kinase C and calcium-calmodulin. Nature, 356(6370), 618-622.

Hass, R., Pfannkuche, H. J., Kharbanda, S., Gunji, H., Meyer, G., Hartmann, A., Hidaka, H., Resch, K., Kufe, D., and Goppelt-Ströbe, M. (1991).
Protein kinase C activation and protooncogene expression in differentiation/retrodifferentiation of human U-937 leukemia cells. Cell Growth Differ. 2, 541-548.

Heidenreich; O.; Neininger, A.; Schratt, G.; Zinck, R.; Cahill, M.A.; Engel, K.; Kotlyarov, A.; Kraft, R.; Kostka, S.; Gaestel, M.; Nordheim, A. (1999).
MAPKAP kinase 2 phosphorylates serum response factor in vitro and in vivo. J. Biol. Chem., 274(20), 14434-14443.

Hilsenbeck, S.G.; Friedrichs, W.E.; Schiff, R.; O'Connell, P.; Hansen, R.K.; Osborne, C.K.; Fuqua, S.A. (1999).
Statistical analysis of array expression data as applied to the problem of tamoxifen resistance. J. Natl. Cancer Inst., 91(5), 453-459.

Hocevar, B. A., Burns, D. J., and Fields, A. P. (1993).
Identification of protein kinase C (PKC) phosphorylation sites on human lamin B. Potential role of PKC in nuclear lamina structural dynamics. J. Biol. Chem. 268,

7545-7552.

Hooper WC, Abraham RT, Ashendel CL, Woloschak GE. (1989).
Differential responsiveness to phorbol esters correlates with differential expression of protein kinase C in KG-1 and KG-1a human myeloid leukemia cells. Biochim. Biophys. Acta., 1013(1), 47-54.

Hopfield, J. F., Tank, D. W., Greengard, P., and Huganir, R. (1988).
Functional modulation of the nicotinic acetylcholine receptor by tyrosine phosphorylation. Nature 336, 677-680.

House, C.; Kemp, B.E. (1987).
Protein kinase C contains a pseudosubstrate prototope in its regulatory domain. Science, 238(4834), 1726-1728.

Huang, C.K., Zhan, L.; Ai, Y.; Jongstra, J. (1997).
LSP1 is the major substrate for mitogen-activated protein kinase-activated protein kinase 2 in human neutrophils. J. Biol. Chem., 272(1),17-9.

Hug, H. and Sarré, T. (1993).
Protein kinase C isozymes: divergence in signal transduction? Biochem. J. 291, 329-343.

Hughes, T.R.; Marton, M.J.; Jones, A.R.; Roberts, C,J.; Stoughton, R.; Armour, C.D.; Bennett, H.A.; Coffey, E.; Dai, H.; He, Y.D.; Kidd, M.J.; King, A.M.; Meyer, M.R.; Slade, D.; Lum, P.Y.; Stepaniants, S.B.; Shoemaker, D.D.; Gachotte, D.; Chakraburtty, K.; Simon, J.; Bard, M.; Friend, S.H. (2000).
Functional discovery via a compendium of expression profiles. Cell, 102(1), 109-126.

Hunter, T.; Ling, N.; Cooper, J.A. (1984).
Protein kinase C phosphorylation of the EGF receptor at a threonine residue close to the cytoplasmic face of the plasma membrane. Nature, 311(5985), 480-483.

Inoue, M., Kishimoto, A., Takai, Y., and Nishizuka, Y. (1977).
Studies on a cyclic nucleotide-independent protein kinase and its proenzyme in mammalian tissues. II. Proenzyme and its activation by calcium-dependent protease from rat brain. J. Biol. Chem. 252, 7610-7616.

Isseroff, R. R., Stephens, L. E., and Gross, J. L. (1989).
Subcellular distribution of protein kinase C/phorbol ester receptors in differentiating mouse keratinocytes. J. Cell. Physiol. 141, 235-242.

Janosch, P.; Schellerer, M.; Seitz, T.; Reim, P.; Eulitz, M.; Brielmeier, M.; Kölch, W.; Sedivy, J.M.; Mischak, H. (1996).
Characterization of IkB kinases. IkB-a is not phosphorylated by Raf-1 or protein kinase C, but is a casein kinase II substrate. J. Biol. Chem. 271, 13868-13874.

Iyer, V.R.; Eisen, M.B.; Ross, D.T.; Schuler, G.; Moore, T.; Lee, J.C.F.; Trent, J.M.; Staudt, L.M.; Hudson, J. Jr.; Boguski, M.S.; Lashkari, D.; Shalon, D.; Botstein, D.; Brown, P.O. (1999).
The transcriptional program in the response of human fibroblasts to serum. Science, 283(5398), 83-87.

Johannes, F.J.; Prestle, J.; Eis, S.; Oberhagemann, P.; Pfizenmaier, K. (1994).

PKCu is a novel, atypical member of the protein kinase C family. J. Biol. Chem., 269(8), 6140-6148.

Johnston, M. (1998).
Gene chips: array of hope for understanding gene regulation. Curr. Biol., 8(5), R171-174.

Kang, S.A.; Cho, Y.J.; Moon, H.B.; Na, D.S. (1996).
Translocation of lipocortin (annexin) 1 to the membrane of U937 cells induced by phorbol ester, but not by dexamethasone. Br. J. Pharmacol., 117(8),1780-1784

Kansas, G.S. (1996).
Selectins and their ligands: current concepts and controversies. Blood, 88(9), 3259-3287.

Keenan C.; Kelleher D. (1998).
Protein kinase C and the cytoskeleton. Cell Signal, 10(4), 225-232.

Kikkawa U., Takai Y., Tanaka Y., Miyake R. and Nishizuka Y. (1983).
Protein kinase C as a possible receptor protein of tumor-promoting phorbol esters. J. Biol. Chem. 258, 11442-11445.

Klauck T. M., Faux M. C., Labudda K., Langeberg L. K., Jaken S. and Scott J. D. (1996) .
Coordination of three signaling enzymes by AKAP79, a mammalian scaffold protein. Science 271, 1589-1592.

Koide, H.; Ogita, K.; Kikkawa, U.; Nishizuka, Y. (1992).
Isolation and characterization of the epsilon subspecies of protein kinase C from rat brain. Proc. Natl. Acad. Sci., 89(4), 1149-1153.

Kolch, W., Heidecker, G., Kochs, G., Hummel, R., Vahidi, H., Mischak, H., Finkenzeller, G., Marme, D., and Rapp, U. R. (1993).
Protein kinase C alpha activates RAF-1 by direct phosphorylation. Nature 364, 249-252.

Komatsu, S.; Hosoya, H. (1996).
Phosphorylation by MAPKAP kinase 2 activates Mg(2+)-ATPase activity of myosin II. Biochem. Biophys. Res. Commun., 223(3), 741-745.

Kotlyarov, A.; Neininger, A.; Schubert, C.; Eckert, R.; Birchmeier, C.; Volk, H.D.; Gaestel, M. (1999).
MAPKAP kinase 2 is essential for LPS-induced TNF-alpha biosynthesis. Nat. Cell. Biol., 1(2), 94-97.

Kruger, E.A.; Blagosklonny, M.V.; Dixon, S.C.; Figg, W.D. (1998-99).
UCN-01, a protein kinase C inhibitor, inhibits endothelial cell proliferation and angiogenic hypoxic response. Invasion Metastasis, 18(4), 209-218.

Lee, J.C.; Laydon, J.T.; McDonnell, P.C.; Gallagher, T.F.; Kumar, S.; Green, D.; McNulty, D.; Blumenthal, M.J.; Heys, J.R.; Landvatter, S.W.; et al. (1994).
A protein kinase involved in the regulation of inflammatory cytokine biosynthesis. Nature, 372(6508), 739-746.

Lennon, G.G., Lehrach, H. (1991).

Hybridization analyses of arrayed cDNA libraries. Trends Genet, 7(10), 314-317.

Levy-Strumpf, N.; Kimchi, A. (1998).
Death associated proteins (DAPs): from gene identification to the analysis of their apoptotic and tumor suppressive functions. Oncogene, 17(25), 3331-3340.

Li, W.; Michieli, P.; Alimandi, M.; Lorenzi, M.V.; Wu, Y.; Wang, L.H.; Heidaran, M.A.; Pierce, J.H. (1996).
Expression of an ATP binding mutant of PKC-delta inhibits Sis-induced transformation of NIH3T3 cells. Oncogene, 13(4), 731-737.

Liemann, S.; Huber, R. (1997).
Three-dimensional structure of annexins. Cell Mol. Life Sci., 53(6),516-521.

Lim, L.H.; Solito, E.; Russo-Marie, F.; Flower, R.J.; Perretti, M. (1998).
Promoting detachment of neutrophils adherent to murine postcapillary venules to control inflammation: effect of lipocortin 1. Proc. Natl. Acad. Sci. USA, 95(24), 14535-14539.

Liou, M.L.; Liou, H.C. (1999).
The ubiquitin-homology protein, DAP1, associates with tumor necrosis factor receptor (p60) death domain and induces apoptosis. J. Biol. Chem., 274(15), 10145-10153.

Lipshutz, R. J.; Fodor, S. P.A.; Gingeras, T. R. & Lockhart D. J. (1999).
High density synthetic oligonucleotide arrays. Nature Genet. 21 (Suppl.), 20-24.

Liu J.P. (1996).
Protein kinase C and its substrates. Mol Cell Endocrinol, 116(1), 1-29.

Liu, W.S.; Heckman, C.A. (1998).
The sevenfold way of PKC regulation. Cell Signal,10(8), 529-542.

Livneh, E., Shimon, T., Bechor, E., Doki, Y., Schieren, I. and Weinstein, I. B. (1996) Linking protein kinase C to the cellcycle: ectopic expression of PKC eta in NIH 3T3 cells alters the expressions of cyclins and Cdk inhibitors and induces adipogenesis. Oncogene 12, 1545-1555.

Lockhart, D.J.; Dong, H.; Byrne, M.C.; Follettie, M.T.; Gallo, M.V.; Chee, M.S.; Mittmann, M.; Wang, C.; Kobayashi, M.; Horton, H.; Brown, E.L. (1996).
Expression monitoring by hybridization to high-density oligonucleotide arrays. Nat. Biotechnol., 14(13),1675-1680.

Meek, D.W. (1998).
Multisite phosphorylation and the integration of stress signals at p53. Cell Signal, 10(3), 159-66.

Megidish, T.; Takio, K.; Titani, K.; Iwabuchi, K.; Hamaguchi, A.; Igarashi, Y.; Hakomori, S. (1999).
Endogenois substrates of shingosine-dependent kinases (SDKs) are chaperone proteins: heat shock proteins, glucose-regulates proteins, protein-disulfide isomerase, and calreticulin. Biochemistry, 38, 3369-3378.

Michal, G. (Herausgeber) (1999).
Biochemical Pathways, Spektrum Akademischer Verlag GmbH Heidelberg,

ISBN 3-86025-239-9. 19.1-3.

Mischak, H., Goodnight, J., Henderson, D. W., Osada, S., Ohno, S., and Mushinski, J. F. (1993c).
Unique expression pattern of protein kinase C-θ: high mRNA levels in normal mouse testes and in T-lymphocytic cells and neoplasms. FEBS Lett. 326, 51-55.

Mischak, H., Goodnight, J., Kolch, W., Martiny-Baron, G., Schaechtle, C., Kazanietz, M. G., Blumberg, P. M., Pierce, J. H., and Mushinski, J. F. (1993b).
Overexpression of protein kinase C-δ and -ε in NIH 3T3 cells induces opposite effects on growth, morphology, anchorage dependence, and tumorigenicity. J. Biol. Chem. 268, 6090-6096.

Mischak, H., Kolch, W., Goodnight, J., Davidson, W. F., Rapp, U., Rose-John, S., and Mushinski, J. F. (1991a).
Expression of protein kinase C genes in hemopoietic cells is cell-type- and B cell-differentiation stage specific. J. Immunol. 147, 3981-3987.

Mischak, H.; Bodenteich, A.; Kolch, W.; Goodnight, J.; Hofer, F.; Mushinski, J.F. (1991b).
Mouse protein kinase C-delta, the major isoform expressed in mouse hemopoietic cells: sequence of the cDNA, expression patterns, and characterization of the protein. Biochemistry, 30(32), 7925-7931.

Mischak, H.; Pierce, J.H.; Goodnight, J.; Kazanietz, M.G.; Blumberg, P.M.; Mushinski, J.F. (1993).
Phorbol ester-induced myeloid differentiation is mediated by protein kinase C-alpha and –delta and not by protein kinase C-beta II, -epsilon, -zeta, and -eta. J. Biol. Chem., 268(27), 20110-5.

Mochly-Rosen D., Khaner H. and Lopez J. (1991)
Identification of intracellular receptor pro teins for activated protein kinase C. Proc. Natl. Acad. Sci. USA, 88, 3997-4000.

Mori, T.; Miura, K.; Fujiwara, T.; Shin, S.; Inazawa, J.; Nakamura, Y. (1996).
Isolation and mapping of a human gene (DIFF6) homologous to yeast CDC3, CDC10, CDC11, and CDC12, and mouse Diff6.Cytogenet. Cell. Genet., 73(3), 224-227.

Mosior, M. and Newton, A. C. (1995)
Mechanism of interaction of protein kinase C with phorbol esters. Reversibility and nature of membrane association.J. Biol. Chem., 270(43), 25526-25533.

Moss, S.E. (1995).
Ion channels. Annexins taken to task. Nature, 378(6556), 446-447.

Newton, A. C. (1995)
Protein kinase C: Structure, function, and regulation. J. Biol. Chem. 270, 28495-28498.

Newton, A.C. (1997a).
Regulation of protein kinase C. Curr. Opin. Cell Biol., 9(2),161-167.

Newton, R.A.; Thiel, M.; Hogg, N. (1997b).

Signaling mechanisms and the activation of leukocyte integrins. J. Leukoc. Biol., 61(4), 422-426.

Nishikawa, K.; Toker, A.; Johannes, F. J.; Songyang, Z.; Cantley, LC. (1997). Determination of the specific substrate sequence motives of protein kinase C isozymes. J. Biol. Chem. 272(2), 952-960.

Nishizuka, Y. (1992)
Intracellular signaling by hydrolysis of phospholipids and activation of protein kinase C. Science, 258 (5082), 607-614.

Nottenburg, C.; Gallatin, W.M.; St. John, T. (1990).
Lymphocyte HEV adhesion variants differ in the expression of multiple gene sequences. Gene, 95(2), 279-284

Nuwaysir, E.F.; Bittner, M.; Trent, J.;, Barrett, J.C.; Afshari, C.A. (1999).
Microarrays and toxicology: the advent of toxicogenomics. Mol. Carcinog., 24(3),153-159.

O'Farrell, P. H. (1975).
High resolution two-dimensional electrophoresis of proteins. J. Biol. Chem. 250, 4007–4021.

Obata, T.; Brown, G.E.; Yaffe, M.B. (2000).
MAP kinase pathways activated by stress: the p38 MAPK pathway. Crit. Care Med., 28(4 Suppl), N67-77.

Ogawa, Y.; Takai, Y.; Kawahara, Y.; Kimura, S.; Nishizuka, Y. (1981).
A new possible regulatory system for protein phosphorylation in human peripheral lymphocytes. Characterisation of a calcium-activated, phospholipid-dependent protein kinase. J. Immunol. 127, 1369-1374.

Ogita, K.; Miyamoto, S.; Yamaguchi, K.; Koide, H.; Fujisawa, N.; Kikkawa, U.; Sahara, S.; Fukami, Y.; Nishizuka, Y. (1992).
Isolation and characterization of delta-subspecies of protein kinase C from rat brain. Proc. Natl. Acad. Sci. USA, 89(5), 1592-1596.

Ohno, S., Mizuno, K., Adachi, Y., Hata, a., Akita, Y., Akimoto, K., Osada, S., Hirai, S. and Suzuki, K, (1994).
Activation of novel protein kinase C delta and epsilon C upon mitogenic stimulation of quiescent rat 3Y1 fibroblasts. J. Biol. Chem., 269, 17495-17501.

Osada, S., Hashimoto, Y., Nomura, S., Kohno, Y., Chida, K., Tajima, O., Kubo, K., Akimoto, K., Koizumi, H., Kitamura, Y., and et al (1993).
Predominant expression of nPKC eta, a Ca(2+)-independent isoform of protein kinase C in epithelial tissues, in association with epithelial differentiation. Cell Growth Differ. 4, 167-175.

Osada, S., Mizuno, K., Saido, T. C., Suzuki, K., Kurok, I. T., and Ohno, S. (1992).
A new member of the protein kinase C family, nPKC-q, predominantly expressed in skeletal muscle. Mol. Cell. Biol. 12, 3930-3938.

Perretti, M.; Wheller, S.K.; Choudhury, Q.; Croxtall, J.D.; Flower, R.J. (1995).
Selective inhibition of neutrophil function by a peptide derived from lipocortin 1

N-terminus. Biochem. Pharmacol., 50(7), 1037-1042.

Pierce, J.H.; Di Marco, E.; Cox, G.W.; Lombardi, D.; Ruggiero, M.; Varesio, L.; Wang, L.M.; Choudhury, G.G.; Sakaguchi, A.Y.; Di Fiore, P.P. (1990)
Macrophage-colony-stimulating factor (CSF-1) induces proliferation, chemotaxis, and reversible monocytic differentiation in myeloid progenitor cells transfected with the human c-fms/CSF-1 receptor cDNA. Proc. Natl. Acad. Sci. USA, 87(15), 5613-5617.

Pollack, I.F.; DaRosso, R.C.; Robertson, P.L.; Jakacki, R.L.; Mirro, J.R. Jr.; Blatt, J.; Nicholson, S.; Packer, R.J.; Allen, J.C.; Cisneros, A.; Jordan, V.C. (1997).
A phase I study of high-dose tamoxifen for the treatment of refractory malignant gliomas of childhood. Clin. Cancer Res., 3(7), 1109-1115.

Rausch, O.; Marshall, C.J. (1999).
Cooperation of p38 and extracellular signal-regulated kinase mitogen-activated protein kinase pathways during granulocyte colony-stimulating factor-induced hemopoietic cell proliferation. J. Biol. Chem., 274(7), 4096-4105.

Raynal, P.; Pollard, H.B. (1994).
Annexins: the problem of assessing the biological role for a gene family of multifunctional calcium- and phospholipid-binding proteins. Biochim. Biophys. Acta, 1197(1), 63-93.

Reich, J. (2000).
Ein Fest der Forschung. Die Zeit, 27,1.

Romanova, L.Y.; Alexandrov, I.A.; Nordan, R.P.; Blagosklonny, M.V.; Mushinski, J.F. (1998).
Cross-talk between protein kinase C-alpha (PKC-alpha) and -delta (PKC-delta): PKC-alpha elevates the PKC-delta protein level, altering its mRNA transcription and degradation. Biochemistry, 37(16), 5558-5565.

Ruddock, L.W.; Freedman, R.B.; Klappa, P. (2000).
Specificity in substrate binding by protein folding catalysts: tyrosine and tryptophan residues are the recognition motifs for the binding of peptides to the pancreas-specific protein disulfide isomerase PDIp. Protein Sci., 9(4), 758-764.

Sanchez, J.C.; Schaller, D.; Ravier, F.; Golaz, O.; Jaccoud, S.; Belet, M.; Wilkins M.R.; James, R.; Deshusses, J.; Hochstrasser, D. (1997).
Translationellly controlled tumor protein: a protein identified in several nontumoral cells including erythrocytes. Electrophoresis, 18(1), 150-155.

Sanchez, J.-C.; Wirth, P.; Jaccoud, S.; Appel, R. D.; Sarto,C.; Wilkins, M. R.; Hochstrasser, D. F. (1997).
Electrophoresis, 18, 638-641.

Schena, M.; Shalon, D.; Heller, R.; Chai, A.; Brown, P.O.; Davis, R.W. (1996).
Parallel human genome analysis: microarray-based expression monitoring of 1000 genes. Proc. Natl Acad. Sci. USA, 93(20), 10614–10619.

Schonwasser, D. C., Marais, R. M., Marshall, C. J. and Parker, P. J. (1998).
Activation of the mitogen-activated kinase/ extracellular-signal regulated pathway by conventional, novel and atypical protein kinase C isotypes. Mol Cell Biol 18, 790-

798.

Schultz, H., Engel, K., Gaestel, M. (1997a).
PMA-induced activation of the p42/44ERK- and p38RK-MAP kinase cascades in HL-60 cells is PKC dependent but not essential for differentiation to the macrophage-like phenotype. J. Cell Physiol., 173(3), 310-318.

Schultz, H., Rogalla, T.; Engel, K.; Lee, L.C., Gaestel, M. (1997b).
The protein kinase inhibitor SB203580 uncouples PMA-induced differentiation of HL-60 from phosphorylation of HSP27. Cell Stress Chaperones, 2(1), 41-49.

Seger, R.; Krebs, E.G. (1995).
The MAPK signaling cascade. FASEB J., 9(9),726-35.

Shao, X.; Davletov, B.A.; Sutton, R.B.; Sudhof, T.C.; Rizo, J. (1996).
Bipartite Ca2+-binding motif in C2 domains of synaptotagmin and protein kinase C. Science, 273(5272), 248-251.

Shih NY, Floyd-Smith G. (1996).
Protein kinase C-delta mRNA is down-regulated transcriptionally and post-transcriptionally by 12-O-tetradecanoylphorbol-13-acetate. J. Biol. Chem., 271(27), 16040-16046.

Shimohama, S., Uehara-Kunugi, Y., Terai, K., Taniguchi, T., Kimura, J., and Saitoh, T. (1991).
Expression of protein kinase C isozymes in primary neuronal cultures of the rat cerebellum. J. Neurosci. Res. 29, 261-270.

Sim, A.T.; Scott, J.D. (1999).
Targeting of PKA, PKC and protein phosphatases to cellular microdomains. Cell Calcium, 26(5), 209-217.

Smith, J.A.; Poteet-Smith, C.E.; Lannigan, D.A.; Freed, T.A.; Zoltoski, A.J.; Sturgill, T.W. (2000).
Creation of a Stress-activated p90 Ribosomal S6 Kinase: The Carboxyl-Terminal Tail of the MAPKAPKs Dictates the Signal Trnasduction Pathway in which they Function. J. Biol. Chem., epub ahead of print.

Snow, D.M.; Hart, G.W. (1998).
Nuclear and cytoplasmic glycosylation. Int. Rev. Cytol., 181, 43-74.

Sozeri, O.; Vollmer, K.; Liyanage, M.; Frith, D.; Kour, G.; Mark, G.E. 3d; Stabel, S. (1992).
Activation of the c-Raf protein kinase by protein kinase C phosphorylation. Oncogene 7(11), 2259-2262.

Staudinger J., Zhou J., Burgess R., Elledge S. J. and Olson E. N. (1995)
PICK1: A perinuclear binding protein and substrate for protein kinase C isolated by the yeast two hybrid system. J. Cell Biol. 128, 263-271.

Strulovici, B.; Daniel-Issakani, S.; Oto, E.; Nestor, J., Jr.; Chan, H.; Tsou, A.: (1989).
Activation of distinct protein kinase C isozymes by phorbol esters: correlation with induction of interleukin 1 beta gene expression. Biochemistry, 28(8), 3569-3576.

Takai, Y., Kishimoto, A., Kikkawa, U., Mori, T. and Nishizuka, Y. (1979).
Unsaturated diacylglycerol as a possible messenger for the activation of calcium-activated, phospholipid-dependent protein kinase system. Biochem. Biophys. Res. Commun. 91, 1218-1224.

Tan, Y.; Rouse, J.; Zhang, A.; Cariati, S.; Cohen, P.; Comb, M.J. (1996).
FGF and stress regulate CREB and ATF-1 via a pathway involving p38 MAP kinase and MAPKAP kinase-2. EMBO J., 15(17), 4629-4642.

Thavasu, P.; Propper, D.; McDonald, A.; Dobbs, N.; Ganesan, T.; Talbot, D.; Braybrook, J.; Caponigro, F.; Hutchison, C.; Twelves, C.; Man, A.; Fabbro, D.; Harris, A.; Balkwill, F. (1999).
The protein kinase C inhibitor CGP41251 suppresses cytokine release and extracellular signal-regulated kinase 2 expression in cancer patients. Cancer Res., 59(16), 3980-3984.

Thiele, H.; Berger, M.; Skalweit, A.; Thiele, B.J. (2000).
Expression of the gene and processed pseudogenes encoding the human and rabbit translationellly controlled tumour protein. Eu. J. Biochem., 167(17), 5473-5481.

Tint, I. S., Bonder, E. M., Feder, H. H., Reboulleau, C. P., Vasiliev, J. M., and Gelfand, I. M. (1992).
Reversible structural alterations of undifferentiated and differentiated human neuroblastoma cells induced by phorbol ester. Proc. Natl. Acad. Sci. USA 89, 8160-8164.

Toker, A. (1998).
Signaling through protein kinase C. Front Biosci 3, D1134-1147.

Toker, A., Meyer, M., Reddy, K. K., Falck, J. R., Aneja, S., Parra, A., Burns, D. J., Ballas, L. M. and Cantley, L. C. (1994)
Activation of protein kinase C family members by the novel polyphosphoinositides PtdIns-3,4-P2 and PtdIns-3,4,5-P3. J Biol Chem 269, 32358-32367.

Valverde, A.M.; Sinnett-Smith, J.; Van Lint, J.; Rozengurt, E. (1994).
Molecular cloning and characterization of protein kinase D: a target for diacylglycerol and phorbol esters with a distinctive catalytic domain. Proc. Natl. Acad. Sci. USA, 91(18), 8572-8576.

van Hal, N.L.; Vorst, O.; van Houwelingen, A.M.; Kok, E.J.; Peijnenburg, A.; Aharoni, A.; van Tunen, A.J.; Keijer, J. (2000).
The application of DNA microarrays in gene expression analysis. J. Biotechnol., 78(3), 271-280.

Wagner, S.; Harteneck, C.; Hucho, F.; Buchner, K. (2000).
Analysis of the subcellular distribution of protein kinase Calpha using PKC-GFP fusion proteins. Exp. Cell Res., 258(1), 204-214.

Wahl, S.M.; Feldman, G.M.; McCarthy, J.B. (1996).
Regulation of leukocyte adhesion and signaling in inflammation and disease. J. Leukoc. Biol., 59(6), 789-96.

Walsh B.J.; Gooley A.A.; Williams K.L.; Breit S.N. (1995).
Identification of macrophage activation associated proteins by two-dimensional gel

electrophoresis and microsequencing. J. Leukoc. Biol. 57(3), 507-512.

Walt, D. R. (2000).
Bead-based Fiber-Optic Arrays. Science, 287 (5452), 451– 452.

Wang, D.G.; Fan, J.B.; Siao, C.J.; Berno, A.; Young, P.; Sapolsky, R.; Ghandour, G.; Perkins, N.; Winchester, E.; Spencer, J.; Kruglyak, L.; Stein, L.; Hsie, L.; Topaloglou, T.; Hubbell, E.; Robinson, E.; Mittmann, M.; Morris, M.S.; Shen, N.; Kilburn, D.; Rioux, J.; Nusbaum, C.; Rozen, S.; Hudson, T.J.; Lander, E.S. (1998).
Large-scale identification, mapping, and genotyping of single-nucleotide polymorphisms in the human genome. Science, 280(5366), 1077-1082.

Wang, Q.J.; Acs, P.; Goodnight, J.; Giese., T.; Blumberg, P.M.; Mischak, H.; Mushinski, J.F. (1997).
The catalytic domain of protein kinase C-delta in reciprocal delta and epsilon chimeras mediates phorbol ester-induced macrophage differentiation of mouse promyelocytes. J. Biolog. Chem., 272(1), 76-82.

Wang, X.; Flynn, A.; Waskiewicz, A.J.; Webb, B.L.; Vries, R.G.; Baines, I.A.; Cooper, J.A.; Proud, C.G. (1998).
The phosphorylation of eukaryotic initiation factor eIF4E in response to phorbol esters, cell stresses, and cytokines is mediated by distinct MAP kinase pathways. J. Biol. Chem., 273(16), 9373-9377.

Weinstein, I. B. (1988).
The origins of human cancer: molecular mechanisms of carcinogenesis and their implications for cancer prevention and treatment--twenty-seventh G.H.A. Clowes memorial award lecture. Cancer research, 48 (15), 4135-4143.

Werth, D. K., Niedel, J. E., and Pastan, I. (1983).
Vinculin, a cytoskeletal substrate of protein kinase C. J. Biol. Chem. 258, 11423-11426.

Werz, O.; Klemm, J.; Samuelsson, B.; Radmark, O. (2000).
5-lipoxygenase is phosphorylated by p38 kinase-dependent MAPKAP kinases. Proc. Natl. Acad. Sci. USA, 97(10), 5261-5266.

Westermann, P.; Knoblich, M.; Maier, O.; Lindschau, C.; Haller, H. (1996).
Protein kinase C bound to the Golgi apparatus supports the formation of constitutive transport vesicles. Biochem. J., 320 (Pt 2), 651-658.

Wetsel, W. C., Wasiuddin, A. K., Merchenthaler, I., Rivera, H., Halpern, A. E., Phung, H. M., Negro-Vilar, A., and Hannun, Y. A. (1992).
Tissue and cellular distribution of the extended family of protein kinase C isoenzymes. J. Cell Biol. 117, 121-133.

Whitfield, J. F. (1992) .
Calcium Signals and cancer. Crit Rev Oncog 3, 55-90.

Winkles, J.A. (1998).
Serum- and polypeptide growth factor-inducible gene expression in mouse fibroblasts. Prog. Nucleic. Acid. Res. Mol. Biol., 58, 41-78.

Winzen, R.; Kracht, M.; Ritter, B.; Wilhelm, A.; Chen, C.Y.; Shyu, A.B.; Muller,

M.; Gaestel, M.; Resch, K.; Holtmann, H. (1999).
The p38 MAP kinase pathway signals for cytokine-induced mRNA stabilization via MAP kinase-activated protein kinase 2 and an AU-rich region-targeted mechanism. EMBO J., 18(18), 4969-4980.

Xu, A.; Bellamy, A.R; Taylor, J.A. (1999).
Expression of translationellly controlled tumour protein is regulated by calcium at both the transcriptional and post-transcriptional level. Biochem. 342 (Pt 3), 683-689.

Yoshimura, T.; Matsushima, K.; Oppenheim, J.J.; Leonard, E.J. (1987).
Neutrophil chemotactic factor produced by lipopolysaccharide (LPS)-stimulated human blood mononuclear leukocytes: partial characterization and separation from interleukin 1 (IL 1). J. Immunol., 139(3), 788-793.

Zu, Y.L.; Ai, Y.; Gilchrist, A.; Labadia, M.E.; Sha'afi, R.I.; Huang, C.K. (1996).
Activation of MAP kinase-activated protein kinase 2 in human neutrophils after phorbol ester or fMLP peptide stimulation. Blood, 87(12), 5287-5296.

Skripte:

NCI arrays Training Packet (1999), Lance Miller, Advanced Technology Center, NCI, Bethesda, USA

NCI MicroArray Database System (mAdb) User Manual (1999), mAdb Technical Support, NCI, Bethesda, USA