

5. Literatur

- Adam S. A., Sterne Marr R. and Gerace L. (1990) Nuclear protein import in permeabilized mammalian cells requires soluble cytoplasmic factors. *J. Cell Biol.* **111**, 807-816.
- Almholt K., Arkhammar P. O. G., Thastrup O. and Tullin S. (1999) Simultaneous visualisation of the translocation of protein kinase C α -green fluorescent protein hybrids and intracellular calcium concentrations. *Biochem. J.* **337**, 211-218.
- Bailer S. M., Siniossoglou S., Podtelejnikow A., Hellwig A., Mann M. and Hurt E. (1998) Nup116p and nup100p are interchangeable through a conserved motif which constitutes a docking site for the mRNA transport factor gle2p. *EMBO J.* **17**, 1107-1119.
- Batlle, E., Fabre, M. and Garcia de Herreros, A. (1994) Antipeptide antibodies directed against the C-terminus of protein kinase C zeta (PKC zeta) react with a Ca²⁺- and TPA-sensitive PKC in HT-29 human intestinal epithelial cells. *FEBS Lett.* **344**, 161-165
- 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.
- Beckmann R., Lindschau C., Haller H., Hucho F. and Buchner K. (1994) Differential nuclear localization of protein kinase C isoforms in neuroblastoma x glioma hybrid cells. *Eur. J. Biochem.* **222**, 335-343.
- Bertolaso L., Gibellini D., Secchiero P., Previati M., Falgione D., Visani G., Rizzoli R., Capitani S. and Zauli G. (1998) Accumulation of catalytically active PKC-zeta into nucleus of HL-60 cell line plays a key role in the induction of granulocytic differentiation mediated by all-trans retinoic acid. *Br. J. Haematol.* **100**, 541-549.
- 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.
- Buchner K. (1995) Protein kinase C in the transduction of signals toward and within the cell nucleus. *Eur. J. Biochem.* **228**, 211-221.
- Burns D. J., Bloomenthal J., Myung-Ho L. and Bell R. M. (1990) Expression of the alpha, betaII, and gamma protein kinase C isozymes in the baculovirus-insect cell expression system. *J. Biol. Chem.* **265**, 12044-12061.
- Carey K. L., Richards S. A., Lounsbury K. M. and Macara I. G. (1996) Evidence using a green fluorescent protein-glucocorticoid receptor chimera that the Ran/TC4 GTPase mediates an essential function independent of nuclear protein import. *J. Cell. Biol.* **133**, 985-996.
- Carroll M. P. and May W. S. (1994) Protein kinase C-mediated serine phosphorylation directly activates Raf-1 in murine hematopoietic cells. *J. Biol. Chem.* **269**, 1249-1256.
- 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.

Chalfie M., Tu Y., Euskirchen G., Ward W. W. and Prasher D. C. (1994) Green fluorescent protein as a marker for gene expression. *Science* **263**, 802-805.

Chalfie, M. and Kain, S. (1998) Green fluorescent protein: properties, applications, and protocols. A Wiley-Liss publication.

Cody C. W., Prasher D. C., Westler W. M., Prendergast F. G. and Ward W. W. (1993) Chemical structure of the hexapeptide chromophore of the *Aequorea* green fluorescent protein. *Biochemistry* **32**, 12

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

Coussens L., Rhee L., Parker P. J. and Ullrich A. (1987) Alternative splicing increases the diversity of the human protein kinase C family. *DNA* **6**, 389-394.

Cubitt A. B., Heim R., Adams S. R., Boyd A. E., Gross L. A. and Tsien R. Y. (1995) Understanding, improving and using green fluorescent protein. *TIBS* **20**, 448-455.

Davis L. I. (1995) The nuclear pore complex. *Annu. Rev. Biochem.* **64**, 865-896.

Dekker L. V. and Parker P. J. (1994) Protein kinase C - a question of specificity. *TIBS* **19**, 73-77.

Diaz-Meco M. T., Berra E., Municio M. M., Sanz L., Lozano J., Dominguez I., Diaz Golpe V., Lain de Lera M. T., Alcamí J., Paya C. V. and et al (1993) A dominant negative protein kinase C zeta subspecies blocks NF-kappa B activation. *Mol. Cell Biol.* **13**, 4770-4775.

Dietrich A., Rose-John S. and Marks F. (1989) Expression of the kinase domain of mouse protein kinase C in *E. coli*. *Biochem. Int.* **19**, 163-172.

Dopf J. and Horiagon T. (1996) Deletion mapping of *Aequorea victoria* green fluorescent protein. *Gene* **173**, 39-44.

Eldar H., Ben-Chaim J. and Livneh E. (1992) Deletions in the regulatory or kinase domains of protein kinase C- α cause association with the cell nucleus. *Exp. Cell Res.* **202**, 259-266.

Ellenberg J., Lippincott-Schwartz J. and Presley J. F. (1999) Dual-colour imaging with GFP variants. *Trends. Cell Biol.* **9**, 52-56.

Elliott G. and O'Hare P. (1997) Intercellular trafficking and protein delivery by a herpesvirus structural protein. *Cell* **88**, 223-233.

Emig S., Schmalz D., Shakibaei M. and Buchner K. (1995) The nuclear pore complex protein p62 is one of several sialic-acid-containing proteins of the nuclear envelope. *J. Biol. Chem.* **270**, 13787-13793.

Englmeier L., Olivo J. C. and Mattaj I. W. (1999) Receptor-mediated substrate translocation through the nuclear pore complex without nucleotide triphosphate hydrolysis. *Curr. Biol.* **9**, 30-41.

Essen L. O., Perisic O., Cheung R., Katan M. and Williams R. L. (1996) Crystal structure of a mammalian phosphoinositide-specific phospholipase C delta. *Nature* **380**, 595-602.

Fabre E. and Hurt E. C. (1994) Nuclear transport. *Curr. Opin. Cell Biol.* **6**, 335-342.

Fahrenkrog B., Hurt E. C., Aebi U. and Pante N. (1998) Molecular architecture of the yeast nuclear pore complex: localisation of Nsp1p subcomplexes. *J. Cell. Biol.* **143**, 577-588.

Feng X. and Hannun Y. A. (1998) An essential role for autophosphorylation in the dissociation of activated protein kinase C from the plasma membrane. *J. Biol. Chem.* **273**, 26870-26874.

Feng X., Zhang J., Barak L. S., Meyer T., Caron M. G. and Hannun Y. A. (1998) Visualisation of dynamic trafficking of a protein kinase C beta/green fluorescent protein conjugate reveals differences in G protein coupled receptor activation and desensitisation. *J. Biol. Chem.* **273**, 10755-10762.

Fields A., Petit G. R. and May W. S. (1988) Phosphorylation of lamin B at the nuclear membrane by activated protein kinase C. *J. Biol. Chem.* **263**, 8253-8260.

Filipuzzi I., Fabbro D. and Imber R. (1993) Unphosphorylated alpha-PKC exhibits phorbol ester binding but lacks protein kinase activity *in vitro*. *J. Cell. Biochem.* **52**, 78-83.

Goodnight J., Mischak H., Kolch W. and Muschinski J. (1995) Immunocytochemical localization of eight protein kinase C isozymes overexpressed in NIH 3T3 fibroblasts. Isoform-specific association with microfilaments, Golgi, endoplasmic reticulum, and nuclear and cell membranes. *J. Biol. Chem.* **270**, 9991-10001.

Gökmen-Polar Y. and Fields A. P. (1998) Mapping of a molecular determinant for protein kinase C β II isozyme function. *J. Biol. Chem.* **273**, 20261-20266.

Görlich D. (1998) Transport into and out of the nucleus. *EMBO J.* **17**, 2721-2727.

Görlich D. and Mattaj I. W. (1996) Nucleocytoplasmic transport. *Science* **271**, 1513-1518.

Görlich D., Prehn S., Laskey R. A. and Hartmann E. (1994) Isolation of a protein that is essential for the first step of nuclear protein import. *Cell* **79**, 767-778.

Gossen, M. and Bujard, H. (1992) Tight control of gene expression in mammalian cells by tetracycline- responsive promoters. *Proc. Natl. Acad. Sci. U. S. A.* **89**, 5547-5551

Grobler J. A., Essen L. O., Williams R. L. and Hurley J. H. (1996) C2 domain conformational changes in phospholipase C-delta 1. *Nat. Struct. Biol.* **3**, 788-795.

Hastings J. W. and Morin J. G. (1998) Photons for reporting molecular events: green fluorescent protein and four luciferase systems. In Green fluorescent protein: properties, applications, and protocols (Edited by Chalfie M. and Kain S.), p. 17-41. A Wiley-Liss publication.

Heim R., Cubitt A. B. and Tsien R. Y. (1995) Improved green fluorescence. *Nature* **373**, 663-664.

Hocevar, B. A. and Fields, A. P. (1991) Selective translocation of β II-protein kinase C to the nucleus of human promyelocytic (HL-60) leukemia cells. *J. Biol. Chem.* **266**, 28-33

Htun H., Barsony J., Renyi I., Gould D. L. and Hager G. L. (1996) Visualisation of glucocorticoid receptor translocation and intranuclear organization in living cells with a green fluorescent protein. *Proc. Natl. Acad. Sci. USA* **93**, 4845-4850.

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.

Iovine M. K. and Wente S. R. (1997) A nuclear export signal in Kap95 is required for both recycling the import factor and interaction with the nucleoporin GLFG repeat regions of Nup116p and Nup100p. *J. Cell. Biol.* **137**, 797-811.

James G. and Olson E. (1992) Deletion of the regulatory domain of protein kinase C α exposes regions in the hinge and catalytic domains that mediate nuclear targeting. *J. Cell Biol.* **116**, 863-874.

Kalderon D., Richardson W., Markham A. and Smith A. (1984) Sequence requirements for nuclear location of simian virus 40 large-T antigen. *Nature* **311**, 33-38.

Keranen L. M., Dutil E. M. and Newton A. C. (1995) Protein kinase C is regulated *in vivo* by three functionally distinct phosphorylations. *Curr. Biol.* **5**, 1394-1403.

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.

Kim Y., Kim Y. E., Lee T. G., Kim J. H., Park J. B., Han J. M., Jang S. K., Suh P. G. and Ryu S. H. (1999) Phospholipase D1 is located and activated by protein kinase C alpha in the plasma membrane in 3Y1 fibroblasts cell. *Biochim. Biophys. Acta* **1436**, 319-330.

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.

Knighton D. R., Zheng J. H., Ten Eyck L. F., Ashford V. A., Xuong N. H., Taylor S. S. and Sowadski J. M. (1991) Crystal structure of the catalytic subunit of cyclic adenosine monophosphate-dependent protein kinase. *Science* **253**, 407-414.

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

Krüger H., Schröder W., Buchner K. and Hucho F. (1990) Protein kinase C inhibition by calmodulin and its fragments. *J. Protein Chem.* **9**, 467-473.

Laemmli U. K. (1970) Cleavage of structural proteins during the assembly of the head of the bacteriophage T4. *Nature* **227**, 680-685.

Le Good J. A., Ziegler W. H., Parekh D. B., Alessi D. R., Cohen P. and Parker P. J. (1998) Protein kinase C isotypes controlled by phosphoinositide 3-kinase through the protein kinase PDK1. *Science* **281**, 2042-2045.

Leach K. L., Powers E. A., Ruff V. A., Jaken S. and Kaufmann S. (1989) Type 3 protein kinase C localization to the nuclear envelope of phorbol ester-treated NIH 3T3 cells. *J. Cell Biol.* **109**, 685-695.

Leach K. L., Ruff V. A., Jarpe M. B., Adams L. D., Fabbro D. and Raben D. M. (1992) α -thrombin stimulates nuclear diacylglyceride levels and differential nuclear localization of protein kinase C isozymes in IIC9 cells. *J. Biol. Chem.* **267**, 21816-21822.

Lippincott-Schwartz J. (1998) The uses of green fluorescent protein in mammalian cells. In Green fluorescent protein: properties, applications, and protocols (Edited by Chalfie M. and Kain S.), p. 243-268. A Wiley-Liss publication.

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

Malmberg A. B., Chen C., Tonegawa S. and Basbaum A. I. (1997) Preserved acute pain and reduced neuropathic pain in mice lacking PKCgamma. *Science* **278**, 279-283.

Mattaj I. W. and Englmeier L. (1998) Nucleocytoplasmic transport: The soluble phase. *Annu. Rev. Biochem.* **67**, 265-306.

Melchior F. and Gerace L. (1995) Mechanisms of nuclear protein import. *Curr. Opin. Cell Biol.* **7**, 310-318.

Michael M., Eder P. and Dreyfuss G. (1997) The K nuclear shuttling domain: a novel signal for nuclear import and nuclear export in the hn RNP K protein. *EMBO J.* **16**, 3587-3598.

Miyawaki, A.; Llopis, J.; Heim, R.; McCaffery, J. M.; Adams, J. A.; Ikura, M. and Tsien, R. Y. (1997) Fluorescent indicators for Ca^{2+} based on green fluorescent proteins and calmodulin. *Nature* **388**, 882-887

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

Mosior M. and Newton A. C. (1996) Calcium-independent binding to interfacial phorbol esters causes protein kinase C to associate with membranes in the absence of acidic lipids. *Biochemistry* **35**, 1612-1623.

Nakanishi H., Brewer K. A. and Exton J. H. (1993) Activation of the zeta isozyme of protein kinase C by phosphatidylinositol 3,4,5-trisphosphate. *J. Biol. Chem.* **268**, 13-16.

Neri L. M., Borgatti P., Capitani S. and Martelli A. M. (1998) Nuclear diacylglycerol produced by phosphoinositide-specific phospholipase C is responsible for nuclear translocation of protein kinase C- α . *J. Biol. Chem.* **273**, 29738-29744.

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

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

Nigg E. (1997) Nucleoplasmic transport: signals, mechanisms and regulation. *Nature* **386**, 779-787.

Nishizuka Y. (1995) Protein kinase C and lipid signaling for sustained cellular responses. *FASEB J.* **9**, 484-496.

Oancea E. and Meyer T. (1998) Protein kinase C as a molecular machine for decoding calcium and diacylglycerol signals. *Cell* **95**, 307-318.

Oancea E., Teruel M. N., Quest A. F. and Meyer T. (1998) Green fluorescent protein (GFP)-tagged cysteine-rich domains from protein kinase C as fluorescent indicators for diacylglycerol signaling in living cells. *J. Cell. Biol.* **140**, 485-498.

Ogawa H., Inouye S., Tsuji F. I., Yasada K. and Umesono K. (1995) Localisation, trafficking and temperature-dependence of the Aequorea green fluorescent protein in cultured vertebrate cells. *Proc. Natl. Acad. Sci. USA* **92**, 11899-11903.

Ogawa Y., Takai Y., Kawahara Y., Kimura S. and 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.

Ohmori S., Shirai Y., Sakai N., Fujii M., Konishi H., Kikkawa U. and Saito N. (1998) Three distinct mechanisms for translocation and activation of the delta subspecies of protein kinase C. *Mol. Cell. Biol.* **18**, 5263-5271.

Ohno S., Konno Y., Akita Y., Yano A. and Suzuki K. (1990) A point mutation at the putative ATP-binding site of protein kinase C alpha abolishes the kinase activity and renders it down-regulation- insensitive. A molecular link between autophosphorylation and down- regulation. *J. Biol. Chem.* **265**, 6296-6300.

Olson E. N., Burgess R. and Staudinger J. (1993) Protein kinase C as a transducer of nuclear signals. *Cell Growth & Differentiation* **4**, 699-705.

Ono Y., Fujii T., Igarashi K., Kikkawa U., Ogita K. and Nishizuka Y. (1988) Nucleotide sequences of cDNAs for alpha and gamma subspecies of rat brain protein kinase C. *Nucleic Acids Res.* **16**, 5199-5200.

Ono Y., Fujii T., Ogita K., Kikkawa U., Igarashi K. and Nishizuka Y. (1987) Identification of three additional members of rat protein kinase C family: delta-, epsilon- and zeta-subspecies. *FEBS Lett.* **226**, 125-128.

Ormö M., Cubitt A. B., Kallio K., Gross L. A., Tsien R. Y. and Remington S. J. (1996) Crystal structure of the *Aequorea victoria* green fluorescent protein. *Science* **273**, 1392-1395.

Orr J. W. and Newton A. C. (1994) Requirement for negative charge on "activation loop" of protein kinase C. *J. Biol. Chem.* **269**, 27715-27718.

Paine P. L., Moore L. C. and Horowitz S. B. (1975) Nuclear envelope permeability. *Nature* **254**, 109-114.

Paschal B. M. and Gerace L. (1995) Identification of NTF-2, a cytosolic factor for nuclear import that interacts with nuclear pore complex protein p62. *J. Cell. Biol.* **129**, 925-937.

Pears C. J., Kour G., House C., Kemp B. E. and Parker P. J. (1990) Mutagenesis of the pseudosubstrate site of protein kinase C leads to activation. *Eur. J. Biochem.* **194**, 89-94.

Pears C. J. and Parker P. J. (1991) Domain interactions in protein kinase C. *J. Cell Sci.* **100**, 683-686.

Pollard V. W., Michael W. M., Nakielny S., Siomi M. C., Wang F. and Dreyfuss G. (1996) A novel receptor-mediated nuclear protein import pathway. *Cell* **86**, 985-994.

Pollok B. A. and Heim R. (1999) Using GFP in FRET-based applications. *Trends. Cell Biol.* **9**, 57-60.

Prasher D. C., Eckenrode V. K., Ward W. W., Prendergast F. G. and Cormier M. J. (1992) Primary structure of the *Aequorea victoria* green-fluorescent protein. *Gene* **111**, 229-233.

Prevostel C., Alvaro V., Vallentin A., Martin A., Jaken S. and Joubert D. (1998) Selective loss of substrate recognition induced by the tumour-associated D294G point mutation in protein kinase Calpha. *Biochem. J.* **334**, 393-397.

Radu A., Blobel G. and Moore M. (1995) Identification of a protein complex that is required for nuclear protein import and mediates docking of import substrate to distinct nucleoporins. *Proc. Natl. Acad. Sci. USA* **92**, 1769-1773.

Ramakers G. M., Gerendasy D. D. and de Graan P. N. (1999) Substrate phosphorylation in the protein kinase C γ knockout mouse. *J. Biol. Chem.* **274**, 1873-1874.

Rexach M. and Blobel G. (1995) Protein import into nuclei: association and dissociation reactions involving transport, substrate, transport factors, and nucleoporins. *Cell* **83**, 683-692.

Ribbeck K., Kutay U., Paraskeva E. and Görlich D. (1999) The translocation of transportin-cargo complexes through nuclear pores is independent of both Ran and energy. *Curr. Biol.* **9**, 47-50.

Robbins J., Dilworth S. M., Laskey R. A. and Dingwall C. (1991) Two interdependent basic domains in nucleoplasmin nuclear targeting sequence: identification of a class of bipartite nuclear targeting sequence. *Cell* **64**, 615-623.

Rosenberger U. (1997) Lokalisierung und Verankerung der Proteinkinase C im neuronalen Zellkern. Dissertation, Freie Universität Berlin

Rout M. P. and Wente S. R. (1994) Pores for thought: nuclear pore complex proteins. *Trends Cell Biol.* **4**, 357-365.

Rudt F. and Pieler T. (1996) Cytoplasmic retention and nuclear import of 5S ribosomal RNA containing RNPs. *EMBO J.* **15**, 1383-1391.

Sakai N., Sakai K., Ikegaki N., Shirai Y., Ono Y. and Saito N. (1997) Direct visualisation of the translocation of the gamma-subspecies of protein kinase C in living cells using fusion proteins with green fluorescent protein. *J. Cell. Biol.* **139**, 1465-1476.

Samuels D. S., Shimizu Y. and Shimizu N. (1989) Protein kinase C phosphorylates DNA topoisomerase I. *FEBS Lett.* **259**, 57-60.

Santel A., Winhauer T., Blümer N. and Renkawitz-Pohl R. (1997) The Drosophila don juan (dj) gene encodes a novel sperm specific protein component characterized by an unusual domain of a repetitive amino acid motif. *Mechanisms of Development* **64**, 19-30.

Scheidereit C. (1998) Docking IκB kinases. *Nature* **395**, 225-226.

Schmalz D. (1995) Untersuchungen zum Kerntransport der Proteinkinase C. Diplomarbeit, Freie Universität Berlin

Schmalz D., Hucho F. and Buchner K. (1998) Nuclear import of protein kinase C occurs by a mechanism distinct from the mechanism used by proteins with a classical nuclear localization signal. *J. Cell Sci.* **111**, 1823-1830.

Schmalz D., Kalkbrenner F., Hucho F. and Buchner K. (1996) Transport of protein kinase C α into the nucleus requires intact cytoskeleton while the transport of a protein containing a canonical nuclear localization signal does not. *J. Cell Sci.* **109**, 2401-2406.

Shao X., Davletov B. A., Sutton R. B., Sudhof T. C. and Rizo J. (1996) Bipartite Ca^{2+} -binding motif in C2 domains of synaptotagmin and protein kinase C. *Science* **273**, 248-251.

Shimomura O. (1979) Structure of the chromophore of Aequorea green fluorescent protein. *FEBS Lett.* **104**, 220-222.

Shimomura O. (1998) The discovery of green fluorescent protein. In Green fluorescent protein: properties, applications, and protocols (Edited by Chalfie M. and Kain S.), p. 3-15. A Wiley-Liss publication.

Shirai Y., Kashiwagi K., Yagi K., Sakai N. and Saito N. (1998) Distinct effects of fatty acids on translocation of gamma- and epsilon-subspecies of protein kinase C. *J. Cell. Biol.* **143**, 511-521.

Smallwood J. I. and Malawista S. E. (1998) An apparently novel protein of human leukocytes, reactive with an antibody to protein kinase C-gamma, is rapidly modified upon cell activation: initial characterization in neutrophils and their cytoplasts. *Inflammation* **22**, 1-28.

Srinivasan N., Bax B., Blundell T. L. and Parker P. J. (1996) Structural aspects of the functional modules in human protein kinase-C alpha deduced from comparative analyses. *Proteins* **26**, 217-235.

Staudinger J., Lu J. and Olson E. N. (1997) Specific Interaction of the PDZ Domain Protein PICK1 with the COOH Terminus of Protein Kinase C- α . *J. Biol. Chem.* **272**, 32019-32024.

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.

Stempka L., Girod A., Muller H. J., Rincke G., Marks F., Gschwendt M. and Bossemeyer D. (1997) Phosphorylation of protein kinase Cdelta (PKCdelta) at threonine 505 is not a prerequisite for enzymatic activity. Expression of rat PKCdelta and an alanine 505 mutant in bacteria in a functional form. *J. Biol. Chem.* **272**, 6805-6811.

Sutton R. B., Davletov B. A., Berghuis A. M., Sudhof T. C. and Sprang S. R. (1995) Structure of the first C2 domain of synaptotagmin I: a novel Ca^{2+} /phospholipid-binding fold. *Cell* **80**, 929-938.

Toker A. (1998) Signaling through protein kinase C. *Frontiers in Bioscience* **3**, 1134-1147.

Topham M. K., Bunting M., Zimmerman G. A., McIntyre T. M., Blackshear P. J. and Prescott S. M. (1998) Protein kinase C regulates the nuclear localization of diacylglycerol kinase-zeta. *Nature* **394**, 697-700.

Trubiani O., Bollum F. J. and Di Primio R. (1995) Terminal deoxynucleotidyl transferase is a nuclear PKC substrate. *FEBS Lett.* **374**, 367-370.

Tsien R. Y. and Prasher D. C. (1998) Molecular biology and mutation of green fluorescent protein. In Green fluorescent protein: properties, applications and protocols (Edited by Chalfie M. and Kain S.), p. 97-118. A Wiley-Liss publication.

Ward W. W. (1979) Energy transfer processes in bioluminescence. *Photochemical and photobiological reviews* **4**, 1-57.

Weiss K. (1998) Importins and exportins: how to get in and out of the nucleus. *TIBS* **23**, 185-189.

Yang, F.; Moss, L. G. and Phillips, G. N., Jr.(1996) The molecular structure of green fluorescent protein. *Nat. Biotechnol.* **14**, 1246-1251

Zhang G., Kazanietz M. G., Blumberg P. M. and Hurley J. H. (1995) Crystal structure of the cys2 activator-binding domain of protein kinase C delta in complex with phorbol ester. *Cell* **81**, 917-924.

Zhou G., Seibenhener M. L. and Wooten M. W. (1997) Nucleolin is a protein kinase C-zeta substrate. Connection between cell surface signaling and nucleus in PC12 cells. *J. Biol. Chem.* **272**, 31130-31137.

Zouari, N., Roche B., Seegers J. F. and Serror (1997) Purification of two *Bacillus subtilis* proteins which cross-react with antibodies directed against eukaryotic protein kinase C, the his HPr kinase and trigger factor. *Microbiology* **143**, 1151-1161