5 Literaturverzeichnis

Abe, T. and Maeda, Y. (1989) The prestalk/prespore differentiation and polarized cell movement in *Dictyostelium discoideum* slugs. A possible involvement of the intracellular Ca2+ -concentration. *Protoplasma*, **151**, 175-178.

Aichem, A. and Mutzel, R. (2001) Unconventional mRNA processing in the expression of two calcineurin B isoforms in *Dictyostelium*. *J Mol Biol*, **308**, 873-882.

Aitken, A., Cohen, P., Santikarn, S., Williams, D.H., Calder, A.G., Smith, A. and Klee, C.B. (1982) Identification of the NH2-terminal blocking group of calcineurin B as myristic acid. *FEBS Lett*, **150**, 314-318.

Araki, T., Gamper, M., Early, A., Fukuzawa, M., Abe, T., Kawata, T., Kim, E., Firtel, R.A. and Williams, J.G. (1998) Developmentally and spatially regulated activation of a *Dictyostelium* STAT protein by a serpentine receptor. *EMBO J.*, **17**, 4018-4028.

Aramburu, J., Heitman, J. and Crabtree, G.R. (2004) Calcineurin: a central controller of signalling in eukaryotes. *EMBO Rep*, **5**, 343-348.

Asai, A., Qiu, J., Narita, Y., Chi, S., Saito, N., Shinoura, N., Hamada, H., Kuchino, Y. and Kirino, T. (1999) High level calcineurin activity predisposes neuronal cells to apoptosis. *J Biol Chem*, **274**, 34450-34458.

Baumgrass, R., Weiwad, M., Erdmann, F., Liu, J.O., Wunderlich, D., Grabley, S. and Fischer, G. (2001) Reversible inhibition of calcineurin by the polyphenolic aldehyde gossypol. *J Biol Chem*, **276**, 47914-47921.

Berridge, M.J., Lipp, P. and Bootman, M.D. (2000) The versatility and universality of calcium signalling. *Nat Rev Mol Cell Biol*, **1**, 11-21.

Bertram, G., Innes, S., Minella, O., Richardson, J. and Stansfield, I. (2001) Endless possibilities: translation termination and stop codon recognition. *Microbiology*, **147**, 255-269.

Blankenship, J.R., Wormley, F.L., Boyce, M.K., Schell, W.A., Filler, S.G., Perfect, J.R. and Heitman, J. (2003) Calcineurin is essential for *Candida albicans* survival in serum and virulence. *Eukaryot Cell*, **2**, 422-430.

Bogumil, R., Namgaladze, D., Schaarschmidt, D., Schmachtel, T., Hellstern, S., Mutzel, R. and Ullrich, V. (2000) Inactivation of calcineurin by hydrogen peroxide and phenylarsine oxide. Evidence for a dithiol-disulfide equilibrium and implications for redox regulation. *Eur J Biochem*, **267**, 1407-1415.

Bonetti B., Fu L., Moon J. and Bedwell D.M. (1995) The efficiency of translation termination is determined by a synergistic interplay between upstream and downstream sequences in *Saccharomyces cerevisiae*. *J Mol Biol*, **251**, 334-345.

Bonner, J.T., Clarke jr, W.W., Neely jr, C.h.L. and Slifkin, M.K. (1950) The orientation to light and the extremely sensitive orientation to temperature gradients in the slime mold *Dictyostelium discoideum*. *J. Cell. Compar. Physiol.*, **36**, 149-158.

Bullock, W.O., Fernandez, J.M. and Short, J.M. (1987) XL1-Blue: a high efficiency plasmid transforming recA *Escherichia coli* strain with β-galactosidase selection. *Bio Techniques*, **5**, 376-378

Caplen, N.J., Parrish, S., Imani, F., Fire, A. and Morgan, R.A. (2001) Specific inhibition of gene expression by small double-stranded RNAs in invertebrate and vertebrate systems. *Proc Natl Acad Sci U S A*, **98**, 9742-9747.

Chang, H.Y., Takei, K., Sydor, A.M., Born, T., Rusnak, F. and Jay, D.G. (1995) Asymmetric retraction of growth cone filopodia following focal inactivation of calcineurin. *Nature*, **376**, 686-690.

Chin, E.R., Olson, E.N., Richardson, J.A., Yang, Q., Humphries, C., Shelton, J.M., Wu, H., Zhu, W., Bassel-Duby, R. and Williams, R.S. (1998) A calcineurin-dependent transcriptional pathway controls skeletal muscle fiber type. *Genes Dev*, **12**, 2499-2509.

Chisholm, R.L. and Firtel, R.A. (2004) Insights into morphogenesis from a simple developmental system. *Nat Rev Mol Cell Biol*, **5**, 531-541.

Coates, J.C., Grimson, M.J., Williams, R.S., Bergman, W., Blanton, R.L. and Harwood, A.J. (2002) Loss of the beta-catenin homologue aardvark causes ectopic stalk formation in *Dictyostelium*. *Mech Dev*, **116**, 117-127.

Coukell, B., Li, Y., Moniakis, J. and Cameron, A. (2004) The Ca2+/calcineurin-regulated cup gene family in *Dictyostelium discoideum* and its possible involvement in development. *Eukaryot Cell*, **3**, 61-71.

Crabtree, G.R. (2001) Calcium, calcineurin, and the control of transcription. *J Biol Chem*, **276**, 2313-2316.

Cubitt, A.B., Firtel, R.A., Fischer, G., Jaffe, L.F. and Miller, A.L. (1995) Patterns of free calcium in multicellular stages of *Dictyostelium* expressing jellyfish apoaequorin. *Development*, **121**, 2291-2301.

Cyert, M.S. (2003) Calcineurin signaling in *Saccharomyces cerevisiae*: how yeast go crazy in response to stress. *Biochem Biophys Res Commun*, **311**, 1143-1150.

Dammann, H., Hellstern, S., Husain, Q. and Mutzel, R. (1996) Primary structure, expression and developmental regulation of a Dictyostelium calcineurin A homologue. *Eur J Biochem*, **238**, 391-399.

de la Pompa, J.L., Timmerman, L.A., Takimoto, H., Yoshida, H., Elia, A.J., Samper, E., Potter, J., Wakeham, A., Marengere, L., Langille, B.L., Crabtree, G.R. and Mak, T.W. (1998) Role of the NF-ATc transcription factor in morphogenesis of cardiac valves and septum. *Nature*, **392**, 182-186.

Devreotes, P.N. (1982) Chemotaxis. In Loomis, W.F. (ed.), The development of *Dictyostelium discoideum*. Ac. Press, New York, pp. 117-168.

Diehn, M., Alizadeh, A.A., Rando, O.J., Liu, C.L., Stankunas, K., Botstein, D., Crabtree, G.R. and Brown, P.O. (2002) Genomic expression programs and the integration of the CD28 costimulatory signal in T cell activation. *Proc Natl Acad Sci U S A*, **99**, 11796-11801.

Dolmetsch, R.E., Lewis, R.S., Goodnow, C.C. and Healy, J.I. (1997) Differential activation of transcription factors induced by Ca2+ response amplitude and duration. *Nature*, **386**, 855-858.

Dolmetsch, R.E., Xu, K. and Lewis, R.S. (1998) Calcium oscillations increase the efficiency and specificity of gene expression. *Nature*, **392**, 933-936.

Dormann, D., Vasiev, B. and Weijer, C.J. (1998) Propagating waves control *Dictyostelium discoideum* morphogenesis. *Biophys. Chem.*, **72**, 21-35.

Eichinger, L., Pachebat, J.A., Glockner, G., Rajandream, M.A., Sucgang, R., Berriman, M., Song, J., Olsen, R., Szafranski, K., Xu, Q. et al. (2005) The genome of the social amoeba *Dictyostelium discoideum*. *Nature*, **435**, 43-57.

Elgadi, M.M, and Smiley, J.R. (1999) Picornavirus internal ribosome entry site elements target RNA cleavage events induced by the herpes simplex virus virion host shutoff protein. *J Virol*, **73**, 9222-9231

Ermak, G., Morgan, T.E. and Davies, K.J. (2001) Chronic overexpression of the calcineurin inhibitory gene DSCR1 (Adapt78) is associated with Alzheimer's disease. *J Biol Chem*, **276**, 38787-38794.

Europe-Finner, G.N., McClue, S.J. and Newell, P.C. (1984) Inhibition of aggregation in *Dictyostelium* by EGTA-induced depletion of calcium. *FEMS Microbiol. Lett.*, **21**, 21-25.

Europe-Finner, G.N. and Newell, P.C. (1986) Inositol 1,4,5,-trisphosphate and calcium stimulate actin polymerization in *Dictyostelium discoideum*. *J. Cell Sci.*, **82**, 41-51.

Feng, B. and Stemmer, P.M. (1999) Interactions of calcineurin A, calcineurin B, and Ca^{2+}. *Biochemistry*, **38**, 12481-12489.

Fire, A., Xu, S., Montgomery, M.K., Kostas, S.A., Driver, S.E. and Mello, C.C. (1998) Potent and specific genetic interference by double-stranded RNA in *Caenorhabditis elegans*. *Nature*, **391**, 806-811.

Fox, D.S., Cruz, M.C., Sia, R.A., Ke, H., Cox, G.M., Cardenas, M.E. and Heitman, J. (2001) Calcineurin regulatory subunit is essential for virulence and mediates interactions with FKBP12-FK506 in *Cryptococcus neoformans*. *Mol Microbiol*, **39**, 835-849.

Frolova, L., Le Goff, X., Rasmussen, H.H., Cheperegin, S., Drugeon, G., Kress, M., Arman, I., Haenni, A.L., Celis, J.E., Philippe, M., et al. (1994) A highly conserved eukaryotic protein family possessing properties of polypeptide chain release factor. *Nature*, **372**, 701-703.

Fuentes, J.J., Genesca, L., Kingsbury, T.J., Cunningham, K.W., Perez-Riba, M., Estivill, X. and de la Luna, S. (2000) DSCR1, overexpressed in Down syndrome, is an inhibitor of calcineurin-mediated signaling pathways. *Hum Mol Genet*, **9**, 1681-1690.

Fukuzawa, M., Abe, T. and Williams, J.G. (2003) The *Dictyostelium* prestalk cell inducer DIF regulates nuclear accumulation of a STAT protein by controlling its rate of export from the nucleus. *Development*, **130**, 797-804.

Fukuzawa, M., Araki, T., Adrian, I. and Williams, J.G. (2001) Tyrosine phosphorylation-independent nuclear translocation of a *Dictyostelium* STAT in response to DIF signaling. *Mol. Cell*, **7**, 779-788.

Gajewski, K., Wang, J., Molkentin, J.D., Chen, E.H., Olson, E.N. and Schulz, R.A. (2003) Requirement of the calcineurin subunit gene *canB2* for indirect flight muscle formation in *Drosophila*. *Proc Natl Acad Sci*, **100**, 1040-1045.

Gelebart, P., Opas, M. and Michalak, M. (2005) Calreticulin, a Ca2+-binding chaperone of the endoplasmic reticulum. *Int J Biochem Cell Biol*, **37**, 260-266.

Ginsburg, G.T. and Kimmel, A.R. (1997) Autonomous and nonautonomous regulation of axis formation by antagonistic signaling via 7-span cAMP receptors and GSK3 in *Dictyostelium*. *Genes Dev*, **11**, 2112-23.

Gomer, R.H. and Firtel, R.A. (1987) Cell-autonomous determination of cell-type choice in *Dictyostelium* development by cell-cycle phase. *Science*, **237**, 758-762.

Graef, I.A., Chen, F., Chen, L., Kuo, A. and Crabtree, G.R. (2001) Signals transduced by Ca(2+)/calcineurin and NFATc3/c4 pattern the developing vasculature. *Cell*, **105**, 863-875.

Grant, C.E., Bain, G. and Tsang, A. (1990) The molecular basis for alternative splicing of the CABP1 transcripts in *Dictyostelium discoideum*. *Nucleic Acids Res*, **18**, 5457-5463.

Groenendyk, J., Lynch, J. and Michalak, M. (2004) Calreticulin, $Ca2^{+}$, and calcineurin - signaling from the endoplasmic reticulum. *Mol Cells*, **17**, 383-389.

Guerin, N.A., Larochelle, D.A. (2002) A user's guide to restriction enzyme-mediated integration in *Dictyostelium*. *J Muscle Res Cell Motil*, **23**, 597-604

Guerini, D. and Klee, C.B. (1989) Cloning of human calcineurin A: evidence for two isozymes and identification of a polyproline structural domain. *Proc Natl Acad Sci U S A*, **86**, 9183-9187.

Guo, L., Nakamura, K., Lynch, J., Opas, M., Olson, E.N., Agellon, L.B. and Michalak, M. (2002) Cardiac-specific expression of calcineurin reverses embryonic lethality in calreticulin-deficient mouse. *J Biol Chem*, **277**, 50776-50779.

Habraken, Y., Sung, P., Prakash, L. and Prakash, S. (1995) Structure-specific nuclease activity in yeast nucleotide excision repair protein Rad2. *J Biol Chem*, **270**, 30194-30198.

Hanahan, D. (1983) Studies on transformation of Escherichia coli with plasmids. *J Mol Biol*, **166**, 557-580.

Harrington, J.J. and Lieber, M.R. (1994) Functional domains within FEN-1 and RAD2 define a family of structure-specific endonucleases: implications for nucleotide excision repair. *Genes Dev*, **8**, 1344-1355.

Harwood, A.J., Plyte, S.E., Woodgett, J., Strutt, H. and Kay, R.R. (1995) Glycogen synthase kinase 3 regulates cell fate in *Dictyostelium*. *Cell*, **80**, 139-148.

Hata, R., Masumura, M., Akatsu, H., Li, F., Fujita, H., Nagai, Y., Yamamoto, T., Okada, H., Kosaka, K., Sakanaka, M. and Sawada, T. (2001) Up-regulation of calcineurin Abeta mRNA in the Alzheimer's disease brain: assessment by cDNA microarray. *Biochem Biophys Res Commun*, **284**, 310-316.

Hellstern, S., Dammann, H., Husain, Q. and Mutzel, R. (1997) Overexpression, purification and characterization of *Dictyostelium* calcineurin A. *Res. Microbiol.*, **148**, 335-343.

Hogan, P.G., Chen, L., Nardone, J. and Rao, A. (2003) Transcriptional regulation by calcium, calcineurin, and NFAT. *Genes Dev*, **17**, 2205-2232.

Horn, F. and Gross, J. (1996) A role for calcineurin in *Dictyostelium discoideum* development. *Differentiation*, **60**, 269-275.

Huelsken, J. and Behrens, J. (2002) The Wnt signalling pathway. *J Cell Sci*, **115**, 3977-3978.

Jeromin, A., Muralidhar, D., Parameswaran, M.N., Roder, J., Fairwell, T., Scarlata, S., Dowal, L., Mustafi, S.M., Chary, K.V. and Sharma, Y. (2004) N-terminal myristoylation regulates calcium-induced conformational changes in neuronal calcium sensor-1. *J Biol Chem*, **279**, 27158-27167.

Jermyn, K.A. and Williams, J.G. (1991) An analysis of culmination in *Dictyostelium* using prestalk and stalk-specific cell autonomous markers. *Development*, **111**, 779-787.

Kahl, C.R, Means, A.R. (2004) Calcineurin regulates cyclin D1 accumulation in growth-stimulated fibroblasts. *Mol Biol Cell*, **15**, 1833-1842.

Kay, R.R. and Thompson, C.R.L. (2001) Cross-induction of cell types in *Dictyostelium*: evidence that DIF-1 is made by prespore cells. *Development*, **128**, 4959-4966.

Kay, R.R. and Williams, J.G. (1999) The *Dictyostelium* genome project - an invitation to species hopping. *Trends Genet.*, **15**, 294-297.

Kennedy, M.T., Brockman, H. and Rusnak, F. (1996) Contributions of myristoylation to calcineurin structure/function. *J Biol Chem*, **271**, 26517-26521.

Kessen, U., Schaloske, R., Aichem, A. and Mutzel, R. (1999) Ca(2+)/calmodulin-independent activation of calcineurin from *Dictyostelium* by unsaturated long chain fatty acids. *J Biol Chem*, **274**, 37821-37826.

Kim, L., Harwood, A. and Kimmel, A.R. (2002) Receptor-dependent and tyrosine phosphatase-mediated inhibition of GSK3 regulates cell fate choice. *Dev Cell*, **3**, 523-532.

Kim, L., Liu, J.C. and Kimmel, A.R. (1999) The novel tyrosine kinase ZAK1 activates GSK3 to direct cell fate specification. *Cell*, **99**, 399-408.

Kincaid, R. (1993) Calmodulin-dependent protein phosphatases from microorganisms to man. A study in structural conservatism and biological diversity. *Adv Second Messenger Phosphoprotein Res*, **27**, 1-23.

Kincaid, R.L., Martensen, T.M. and Vaughan, M. (1986) Modulation of calcineurin phosphotyrosyl protein phosphatase activity by calmodulin and protease treatment. *Biochem Biophys Res Commun*, **140**, 320-328.

Kissinger, C.R., Parge, H.E., Knighton, D.R., Lewis, C.T., Pelletier, L.A., Tempczyk, A., Kalish, V.J., Tucker, K.D., Showalter, R.E., Moomaw, E.W. and et al. (1995) Crystal structures of human calcineurin and the human FKBP12-FK506-calcineurin complex. *Nature*, **378**, 641-644.

Klee, C.B. and Cohen, P. (1988) The Calmodulin-regulated protein phosphatase. *Elsevier, Amsterdam*

Klee, C.B., Draetta, G.F. and Hubbard, M.J. (1988) Calcineurin. *Adv Enzymol Relat Areas Mol Biol*, **61**, 149-200.

Klee, C.B. and Krinks, M.H. (1978) Purification of cyclic 3',5'-nucleotide phosphodiesterase inhibitory protein by affinity chromatography on activator protein coupled to Sepharose. *Biochemistry*, **17**, 120-126.

Klee, C.B., Krinks, M.H., Manalan, A.S., Cohen, P. and Stewart, A.A. (1983) Isolation and characterization of bovine brain calcineurin: a calmodulin-stimulated protein phosphatase. *Methods Enzymol*, **102**, 227-244.

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

Lai, M.M., Burnett, P.E., Wolosker, H., Blackshaw, S. and Snyder, S.H. (1998) Cain, a novel physiologic protein inhibitor of calcineurin. *J Biol Chem*, **273**, 18325-18331.

Lim, S., Mullins, J.J., Chen, C.M., Gross, K.W. and Maquat, L.E. (1989) Novel metabolism of several beta zero-thalassemic beta-globin mRNAs in the erythroid tissues of transgenic mice. *Embo J*, **8**, 2613-2619.

Lim, S.K. and Maquat, L.E. (1992) Human beta-globin mRNAs that harbor a nonsense codon are degraded in murine erythroid tissues to intermediates lacking regions of exon I or exons I and II that have a cap-like structure at the 5' termini. *Embo J*, **11**, 3271-3278.

Lin, C.H., Yeh, S.H., Leu, T.H., Chang, W.C., Wang, S.T. and Gean, P.W. (2003) Identification of calcineurin as a key signal in the extinction of fear memory. *J Neurosci*, **23**, 1574-1579.

Lin, X., Sikkink, R.A., Rusnak, F. and Barber, D.L. (1999) Inhibition of calcineurin phosphatase activity by a calcineurin B homologous protein. *J Biol Chem*, **274**, 36125-36131.

Liu, J., Farmer, J.D., Jr., Lane, W.S., Friedman, J., Weissman, I. and Schreiber, S.L. (1991) Calcineurin is a common target of cyclophilin-cyclosporin A and FKBP-FK506 complexes. *Cell*, **66**, 807-815.

Loomis, W. F. (1975) *Dictyostelium discoideum*. A developmental system. *Academic Press Inc.*

MacWilliams, H., Gaudet, P., Deichsel, H., Bonfils, C. and Tsang, A. (2001) Biphasic expression of rnrB in *Dictyostelium discoideum* suggests a direct relationship between cell cycle control and cell differentiation. *Differentiation*, **67**, 12-24.

Malchow, D., Nagele, B., Schwartz, H. and Gerisch, G. (1972) Membrane-bound cyclic AMP phosphodiesterase in chemotactically responding cells of *Dictyostelium discoideum*. *Eur. J. Biochem.*, **28**, 136-142.

Manalan, A.S. and Klee, C.B. (1983) Activation of calcineurin by limited proteolysis. *Proc Natl Acad Sci U S A*, **80**, 4291-4295.

Mansuy, I.M. (2003) Calcineurin in memory and bidirectional plasticity. *Biochem Biophys Res Commun*, **311**, 1195-1208.

Martens, H., Novotny, J., Oberstrass, J., Steck, T.L., Postlethwait, P. and Nellen, W. (2002) RNAi in *Dictyostelium*: the role of RNA-directed RNA polymerases and double-stranded RNase. *Mol Biol Cell*, **13**, 445-453.

McCaffrey, P.G., Perrino, B.A., Soderling, T.R. and Rao, A. (1993) NF-ATp, a T lymphocyte DNA-binding protein that is a target for calcineurin and immunosuppressive drugs. *J Biol Chem*, **268**, 3747-3752.

Means, A. R. (1995) Calcium regulation of cellular function. *Raven Press, New York*

Mendoza, I., Rubio, F., Rodriguez-Navarro, A. and Pardo, J.M. (1994) The protein phosphatase calcineurin is essential for NaCl tolerance of *Saccharomyces cerevisiae*. *J Biol Chem*, **269**, 8792-8796.

Mizunuma, M., Hirata, D., Miyahara, K., Tsuchiya, E. and Miyakawa, T. (1998) Role of calcineurin and Mpk1 in regulating the onset of mitosis in budding yeast. *Nature*, **392**, 303-306.

Molkentin, J.D., Lu, J.R., Antos, C.L., Markham, B., Richardson, J., Robbins, J., Grant, S.R. and Olson, E.N. (1998) A calcineurin-dependent transcriptional pathway for cardiac hypertrophy. *Cell*, **93**, 215-228.

Moniakis, J., Coukell, M.B. and Janiec, A. (1999) Involvement of the Ca2+-ATPase PAT1 and the contractile vacuole in calcium regulation in *Dictyostelium discoideum*. *J Cell Sci*, **112 (Pt 3)**, 405-414.

Murante, R.S., Rust, L. and Bambara, R.A. (1995) Calf 5' to 3' exo/endonuclease must slide from a 5' end of the substrate to perform structure-specific cleavage. *J Biol Chem*, **270**, 30377-30383.

Nakamura, T., Liu, Y., Hirata, D., Namba, H., Harada, S., Hirokawa, T. and Miyakawa, T. (1993) Protein phosphatase type 2B (calcineurin)-mediated, FK506-sensitive regulation of intracellular ions in yeast is an important determinant for adaptation to high salt stress conditions. *Embo J*, **12**, 4063-4071.

Namy, O., Hatin, I. and Rousset, JP. Impact of the six nucleotides downstream of the stop codon on translation termination. *EMBO Rep*, **2**, 787-793.

Nashimoto, M., Geary, S., Tamura, M. and Kaspar, R. (1998) RNA heptamers that direct RNA cleavage by mammalian tRNA 3' processing endoribonuclease. *Nucleic Acids Res*, **26**, 2565-2572.

Neal, J.W. and Clipstone, N.A. (2001) Glycogen synthase kinase-3 inhibits the DNA binding activity of NFATc. *J Biol Chem*, **276**, 3666-3673.

Nebl, T. and Fisher, P.R. (1997) Intracellular Ca2+ signals in *Dictyostelium* chemotaxis are mediated exclusively by Ca2+ influx. *J. Cell Sci.*, **110**, 2845-2853.

Novotny, J., Diegel, S., Schirmacher, H., Mohrle, A., Hildebrandt, M., Oberstrass, J. and Nellen, W. (2001) *Dictyostelium* double-stranded ribonuclease. *Methods Enzymol*, **342**, 193-212.

Parsons, S.A., Wilkins, B.J., Bueno, O.F. and Molkentin, J.D. (2003) Altered skeletal muscle phenotypes in calcineurin Aalpha and Abeta gene-targeted mice. *Mol Cell Biol*, **23**, 4331-4343.

Perrino, B.A., Fong, Y.L., Brickey, D.A., Saitoh, Y., Ushio, Y., Fukunaga, K., Miyamoto, E. and Soderling, T.R. (1992) Characterization of the phosphatase activity of a baculovirus-expressed calcineurin A isoform. *J Biol Chem*, **267**, 15965-15969.

Plyte, S.E., O'Donovan, E., Woodgett, J.R. and Harwood, A.J. (1999) Glycogen synthase kinase-3 (GSK-3) is regulated during *Dictyostelium* development via the serpentine receptor cAR3. *Development*, **126**, 325-333.

Ranger, A.M., Grusby, M.J., Hodge, M.R., Gravallese, E.M., de la Brousse, F.C., Hoey, T., Mickanin, C., Baldwin, H.S. and Glimcher, L.H. (1998) The transcription factor NF-ATc is essential for cardiac valve formation. *Nature*, **392**, 186-190.

Raper, K.B. (1940) Pseudoplasmodium formation and organization in *Dictyostelium discoideum*. *J. Elisha Mitchell Sci. Soc.*, **56**, 241-282.

Raper, K.B. and Fennell, D.I. (1952) Stalk formation in *Dictyostelium*. *Bull. Torrey Bot. Club*, **79**, 25-51.

Resh, M.D. (1999) Fatty acylation of proteins: new insights into membrane targeting of myristoylated and palmitoylated proteins. *Biochim Biophys Acta*, **1451**, 1-16.

Richardson, K.C., Jarett L. and Finke, E.H. (1960) Embedding in epoxy resins for ultrathin sectioning in electron microscopy. *Stain Technol*, **35**, 313-325.

Rothermel, B., Vega, R.B., Yang, J., Wu, H., Bassel-Duby, R. and Williams, R.S. (2000) A protein encoded within the Down syndrome critical region is enriched in striated muscles and inhibits calcineurin signaling. *J Biol Chem*, **275**, 8719-8725.

Rusnak, F. and Mertz, P. (2000) Calcineurin: form and function. *Physiol Rev*, **80**, 1483-1521.

Saneyoshi, T., Kume, S., Amasaki, Y. and Mikoshiba, K. (2002) The Wnt/calcium pathway activates NF-AT and promotes ventral cell fate in *Xenopus* embryos. *Nature*, **417**, 295-299

Saran, S. (1999) Calcium levels during cell cycle correlate with cell fate of *Dictyostelium discoideum*. *Cell Biol Int*, **23**, 399-405.

Saran, S., Azhar, M., Manogaran, P.S., Pande, G. and Nanjundiah, V. (1994) The level of sequestered calcium in vegetative amoebae of *Dictyostelium discoideum* can predict post-aggregative cell fate. *Differentiation*, **57**, 163-169.

Schaap, P., Nebl, T. and Fisher, P.R. (1996) A slow sustained increase in cytosolic Ca2+ levels mediates stalk gene induction by differentiation inducing factor in *Dictyostelium*. *Embo J*, **15**, 5177-5183.

Schaap, P. and Wang, M. (1986) Interactions between adenosine and oscillatory cAMP signaling regulate size and pattern in *Dictyostelium*. *Cell*, **45**, 137-144.

Schlatterer, C., Gollnick, F., Schmidt, E., Meyer, R. and Knoll, G. (1994) Challenge with high concentrations of cyclic AMP induces transient changes in the cytosolic free calcium concentration in *Dictyostelium discoideum*. *J. Cell Sci.*, **107**, 2107-2115.

Schurer, H., Schiffer, S., Marchfelder, A. and Morl, M. (2001) This is the end: processing, editing and repair at the tRNA 3'-terminus. *Biol Chem*, **382**, 1147-1156.

Sonnemann, J., Aichem, A. and Schlatterer, C. (1998) Dissection of the cAMP induced cytosolic calcium response in *Dictyostelium discoideum*: the role of cAMP receptor subtypes and G protein subunits. *FEBS Lett.*, **436**, 271-276.

Spurr, A.G. (1969) A low-viscosity epoxy resin embedding medium for electron microscopy. *J Ultrastructure Res*, **210**,57-69

Stansfield I., Jones K.M., Tuite M.F. (1995) The end in sight: terminating translation in eukaryotes. *Trends Biochem Sci*, **20**, 489-491

Stathopoulos, A.M. and Cyert, M.S. (1997) Calcineurin acts through the CRZ1/TCN1-encoded transcription factor to regulate gene expression in yeast. *Genes Dev*, **11**, 3432-3444.

Stemmer, P.M. and Klee, C.B. (1994) Dual calcium ion regulation of calcineurin by calmodulin and calcineurin B. *Biochemistry*, **33**, 6859-6866.

Stevens, A. (1998) Endonucleolytic cleavage of RNA at 5' endogenous stem structures by human flap endonuclease 1. *Biochem Biophys Res Commun*, **251**, 501-508.

Stewart, A.A., Ingebritsen, T.S., Manalan, A., Klee, C.B. and Cohen, P. (1982) Discovery of a Ca2+- and calmodulin-dependent protein phosphatase: probable identity with calcineurin (CaM-BP80). *FEBS Lett*, **137**, 80-84.

Sun, L., Youn, H.D., Loh, C., Stolow, M., He, W. and Liu, J.O. (1998) Cabin 1, a negative regulator for calcineurin signaling in T lymphocytes. *Immunity*, **8**, 703-711.

Thompson, C.R. and Kay, R.R. (2000) The role of DIF-1 signaling in *Dictyostelium* development. *Mol Cell*, **6**, 1509-1514.

Tomida, T., Hirose, K., Takizawa, A., Shibasaki, F. and Iino, M. (2003) NFAT functions as a working memory of Ca^{2+} signals in decoding Ca^{2+} oscillation. *Embo J*, **22**, 3825-3832.

Tork, S., Hatin. I., Rousset. J.P., Fabret, C. (2004) The major 5' determinant in stop codon read-through involves two adjacent adenines. *Nucleic Acids Res*, **32**, 415-421.

Unterweger, N. and Schlatterer, C. (1995) Introduction of calcium buffers into the cytosol of *Dictyostelium discoideum* amoebae alters cell morphology and inhibits chemotaxis. *Cell Calcium*, **17**, 97-110.

Wang, H.G., Pathan, N., Ethell, I.M., Krajewski, S., Yamaguchi, Y., Shibasaki, F., McKeon, F., Bobo, T., Franke, T.F. and Reed, J.C. (1999) Ca^{2+}-induced apoptosis through calcineurin dephosphorylation of BAD. *Science*, **284**, 339-343.

Wang, J., Liu, S., Haditsch, U., Tu, W., Cochrane, K., Ahmadian, G., Tran, L., Paw, J., Wang, Y., Mansuy, I., Salter, M.M. and Lu, Y.M. (2003) Interaction of calcineurin and type-A GABA receptor gamma 2 subunits produces long-term depression at CA1 inhibitory synapses. *J Neurosci*, **23**, 826-836.

Wang, J.H. and Desai, R. (1977) Modulator binding protein. Bovine brain protein exhibiting the Ca^{2+}-dependent association with the protein modulator of cyclic nucleotide phosphodiesterase. *J Biol Chem*, **252**, 4175-4184.

Wang, M., van Driel, R. and Schaap, P. (1988) Cyclic AMP-phosphodiesterase induces dedifferentiation of prespore cells in *Dictyostelium discoideum* slugs: evidence that cyclic AMP is the morphogenetic signal for prespore differentiation. *Development*, **103**, 611-618.

Warren, W.D., Phillips, A.M. and Howells, A.J. (1996) *Drosophila melanogaster* contains both X-linked and autosomal homologues of the gene encoding calcineurin B. *Gene*, **177**, 149-153.

Watts, D.J. and Ashworth, J.M. (1970) Growth of myxamoebae of the cellular slime mould *Dictyostelium discoideum* in axenic culture. *Biochem. J.*, **119**, 171-174.

Wei, J., Zhang, M., Zhu, Y. and Wang, J.H. (2004) Ca(2+)-calmodulin signalling pathway up-regulates GABA synaptic transmission through cytoskeleton-mediated mechanisms. *Neuroscience*, **127**, 637-647.

Weijer, C.J., Duschl, G. and David, C.N. (1984) Dependence of cell-type proportioning and sorting on cell cycle phase in *Dictyostelium discoideum*. *J. Cell Sci.*, **70**, 133-145.

Weissenmayer, B., Boeckeler, K., Lahrz, A. and Mutzel, R. (2005) The calcineurin inhibitor gossypol impairs growth, cell signalling and development in *Dictyostelium discoideum*. *FEMS Microbiol Lett*, **242**, 19-25.

Westphal, M., Jungbluth, A., Heidecker, M., Muhlbauer, B., Heizer, C., Schwartz, J.M., Marriott, G. and Gerisch, G. (1997) Microfilament dynamics during cell movement and chemotaxis monitored using a GFP-actin fusion protein. *Curr Biol*, **7**, 176-183.

Winder, D.G., Mansuy, I.M., Osman, M., Moallem, T.M. and Kandel, E.R. (1998) Genetic and pharmacological evidence for a novel, intermediate phase of long-term potentiation suppressed by calcineurin. *Cell*, **92**, 25-37.

Winder, D.G. and Sweatt, J.D. (2001) Roles of serine/threonine phosphatases in hippocampal synaptic plasticity. *Nat Rev Neurosci*, **2**, 461-474.

Withee, J.L., Mulholland, J., Jeng, R. and Cyert, M.S. (1997) An essential role of the yeast pheromone-induced Ca^{2+} signal is to activate calcineurin. *Mol Biol Cell*, **8**, 263-277.

Witke, W., Nellen, W. and Noegel, A. (1987) Homologous recombination in the *Dictyostelium* alpha-actinin gene leads to an altered mRNA and lack of the protein. *EMBO J.*, **6**, 4143-4148.

Wu, H., Naya, F.J., McKinsey, T.A., Mercer, B., Shelton, J.M., Chin, E.R., Simard, A.R., Michel, R.N., Bassel-Duby, R., Olson, E.N. and Williams, R.S. (2000) MEF2 responds to multiple calcium-regulated signals in the control of skeletal muscle fiber type. *Embo J*, **19**, 1963-1973.

Xiao, S., Scott, F., Fierke, C.A. and Engelke, D.R. (2002) Eukaryotic ribonuclease P: a plurality of ribonucleoprotein enzymes. *Annu Rev Biochem*, **71**, 165-189.

Yanisch-Perron, C., Vieira, J. and Messing, J. (1985) Improved M13 phage cloning vectors and host strains: nucleotide sequences of the M13mp18 and pUC19 vectors. *Gene*, **33**, 103-119.

Yumura, S., Furuya, K. and Takeuchi, I. (1996) Intracellular free calcium responses during chemotaxis of *Dictyostelium* cells. *J. Cell Sci.*, **109**, 2673-2678.

Zaug, A.J., Been, M.D. and Cech, T.R. (1986) The *Tetrahymena* ribozyme acts like an RNA restriction endonuclease. *Nature*, **324**, 429-433.

Zhouravleva, G., Frolova, L., Le Goff, X., Le Guellec, R., Inge-Vechtomov, S., Kisselev, L. and Philippe, M. (1995) Termination of translation in eukaryotes is governed by two interacting polypeptide chain release factors, eRF1 and eRF3. *EMBO* J, **14**, 4065-4072.

Zhuo, M., Zhang, W., Son, H., Mansuy, I., Sobel, R.A., Seidman, J. and Kandel, E.R. (1999) A selective role of calcineurin aalpha in synaptic depotentiation in hippocampus. *Proc Natl Acad Sci U S A*, **96**, 4650-4655.