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REFERENCES

- AALTO, M.K., S. KERÄNEN and H. RONNE (1992). A family of proteins involved in intracellular transport. *Cell* 68: 181-182.
- ACHLER, C., D. FILMER, C. MERTE and D. DRENCKHAHN (1989). Role of microtubules in polarized delivery of apical membrane proteins to the brush border of the intestinal epithelium. *J. Cell Biol.* 109: 179-189.
- ADAM, S.A. and L. GERACE (1991). Cytosolic proteins that specifically bind nuclear location signals are receptors for nuclear import. *Cell* 66: 837-847.
- ADAMS, A.E.M., D. BOTSTEIN and D.G. DRUBIN (1991). Requirement of yeast fimbrin for actin organization and morphogenesis *in vivo*. *Nature* 354: 404-408.
- ADLER, P.N., C. VINSON, W.J. PARK, S. CONOVER and L. KLEIN (1990). Molecular structure of *frizzled*, a *Drosophila* tissue polarity gene. *Genetics* 126: 401-416.
- AIST, J.R. and C.J. BAYLES (1991). Organelle motility within mitotic asters of the fungus *Nectria haematococca*. *Eur. J. Cell Biol.* 56: 358-363.
- ALONI, R. (1988). Vascular differentiation within the plant. In *Vascular Differentiation and Plant Growth Regulators*. Pp. 39-62. L.W. Roberts, P.B. Gahan and R. Aloni (eds), Springer-Verlag, Berlin.
- AMAYA, E., T.J. MUSCI and M.W. KIRSCHNER (1991). Expression of a dominant negative mutant of the FGF receptor disrupts mesoderm formation in *Xenopus embryos*. *Cell* 66: 257-270.
- AMOS, L. and W.B. AMOS (1991). *Molecules of the Cytoskeleton*. Macmillan/Guilford Press. 253 pp.
- ANDREOU, A.G. (1991). Electronic arts imitate life. *Nature* 354: 501.
- ANFINSEN, C.B. (1973). Principles that govern the folding of protein chains. *Science* 8: 223-230.
- ARIOKA, M., A. HIRATA, A. TAKATSUKI and M. YAMASAKI (1991). Brefeldin A blocks an early stage of protein transport in *Candida albicans*. *J. Gen. Microbiol.* 137: 1253-1262.
- ATSUMI, T., L. MCCARTER and Y. IMAE (1992). Polar and lateral flagellar motors of marine *Vibrio* are driven by different ion-motive forces. *Nature* 355: 182-184.
- BABA, M., N. BABA, Y. OHSUMI, K. KANAYA and M. OSUMI (1989). Three-dimensional analysis of morphogenesis induced by mating pheromone α factor in *Saccharomyces cerevisiae*. *J. Cell Sci.* 94: 207-216.
- BAIER, H. and F. BONHOEFFER (1992). Axon guidance by gradients of a target-derived component. *Science* 255: 472-475.
- BARINAGA, M. (1991). Is nitric oxide the "retrograde messenger"? *Science* 254: 1296-1297.
- BARJA, F. and G. TURIAN (1992). Chlorotetracycline fluorescent probing of Ca^{2+} sequestration in mitochondria fronting the acidic tip of germ tubes outgrowing from conidia of *Neurospora crassa*. *Biomed. Lett.* 47: 35-38.
- BARJA, F., C. ROSSIER and G. TURIAN (1991a). Actin microfilaments requirement in contrast with microtubules dispensability for germ tube outgrowth from conidia of *Neurospora crassa*. *Plant Physiol. (Life Sci. Adv.)* 10: 63-65.
- BARJA, F., B.-N. NGUYEN THI and G. TURIAN (1991b). Localization of actin and characterization of its isoforms in the hyphae of *Neurospora crassa*. *FEMS Microbiol. Lett.* 77: 19-24.
- BARNES, G., D.G. DRUBIN and T. STEARNS (1990). The cytoskeleton of *Saccharomyces cerevisiae*. *Curr. Opin. Cell Biol.* 2: 109-115.
- BASKIN, T.I., W.R. BRIGGS and M. IINO (1986). Can lateral redistribution of auxin account for phototropism of maize coleoptiles? *Plant Physiol.* 81: 306-309.
- BEARDSLEY, T. (1991). Trends in biology. Smart genes. *Sci. Amer.* 265(2): 72-81.
- BEGG, K.J. and W.D. DONACHIE (1985). Cell shape and division in *Escherichia coli*: experiments with shape and division mutants. *J. Bacteriol.* 163: 615-622.

- BENNER, S.A. and D. GERLOFF (1990). Patterns of divergence in homologous proteins as indicators of secondary and tertiary structure: a prediction of the structure of the catalytic domain of protein kinases. *Adv. Enz. Reg.* 31: 121-181.
- BEZANILLA, F., E. PEROZO, D.M. PAPAIZIAN and E. STEFANI (1991). Molecular basis of gating charge immobilization in Shaker potassium channels. *Science* 254: 679-683.
- BI, E. and J. LUTKENHAUS (1991). FtsZ ring structure associated with division in *Escherichia coli*. *Nature* 354: 161-164.
- BITTISNICH, D.J. and R.E. WILLIAMSON (1989). Tip-localised H⁺-fluxes and the applicability of the acid-growth hypothesis to tip-growing cells: control of chloronemal extension in *Funaria hygrometrica* by auxin and light. *Planta* 178: 96-102.
- BIXBY, J.L. and W.A. HARRIS (1991). Molecular mechanisms of axon growth and guidance. *Ann. Rev. Cell Biol.* 7: 117-159.
- BIXBY, J.L., J. LILIE and L.F. REICHARDT (1989). Identification of the major proteins that promote neuronal process outgrowth on Schwann cells *in vitro*. *J. Cell Biol.* 107: 353-361.
- BLACK, M.M. and P.W. BAAS (1989). The basis of polarity in neurons. *Trends Neurosci.* 12: 211-214.
- BLATT, M.R. (1991). Ion channel gating in plants: physiological implications and integration for stomatal function. *J. Membrane Biol.* 124: 95-112.
- BLOCK, I. and W. BRIEGLEB (1989). Potential sites for the perception of gravity in the acellular slime mold *Physarum polycephalum*. *Adv. Space Res.* 9(11): 75-78.
- BLOOM, G.S. (1992). Motor proteins for cytoplasmic microtubules. *Curr. Opin. Cell Biol.* 4: 66-73.
- BLOXHAM, J. and D. GUBBINS (1989). The evolution of the earth's magnetic field. *Sci. Amer.* 261(6): 30-37.
- BOCK, G.R. and J. MARSH (eds) (1991). Biological Asymmetry and Handedness, Ciba Foundation Symposium 162. Wiley, New York. 327 pp.
- BOGUE, S. (1991). Reversals of opinion. *Nature* 351: 445-446.
- BOMSEL, M. and K. MOSTOV (1991). Sorting of plasma membrane proteins in epithelial cells. *Curr. Opin. Cell Biol.* 3: 647-653.
- BOUNIAS, M. (1990). La Création de la Vie: de la Matière à l'Esprit. Edition du Rocher, Paris. 444 pp.
- BRAY, D. (1992). Cell Movements. Garland, European Book Service. 406 pp.
- BREMER, A. and U. AEBI (1992). The structure of the F-actin filament and the actin molecule. *Curr. Opin. Cell Biol.* 4: 20-26.
- BRETSCHER, M. (1973). Membrane structure: some general principles. *Sciences* 181: 622-629.
- BROCKES, J.P. (1990). Reading the retinoid signals. *Nature* 345: 766-768.
- (1991). We may not have a morphogen. *Nature* 350: 15.
- BRÖNNER, G. and H. JÄCKLE (1991). Control and function of terminal gap gene activity in the posterior pole region of the *Drosophila* embryo. *Mechan. Develop.* 35: 205-211.
- BROUWER, A.M., R.D. MOUT, P.H. MAASSEN VAN DEN BRINK, H.J. VAN RAMESDONK, J.W. VERHOEVEN, S.A. JONKER and J.M. WARMAN (1991). Electrostatically driven folding following light-induced intramolecular electron transfer in a trichromophoric electron donor-acceptor molecule. *Chem. Phys. Lett.* 186: 481-489.
- BROWER, D.L. and T.H. GIDDINGS (1980). The effects of applied electric fields on *Micrasterias*. II. The distributions of cytoplasmic and plasma membrane components. *J. Cell Sci.* 42: 279-290.
- BROWER, D.L. and J.R. MCINTOSH (1980). The effects of applied electric fields on *Micrasterias*. I. Morphogenesis and the pattern of cell wall deposition. *J. Cell Sci.* 42: 261-277.
- BRUNDAGE, R.A., K.E. FOGARTY, R.A. TUFT and F.S. FAY (1991). Calcium gradients underlying polarization and chemotaxis of eosinophils. *Science* 254: 703-706.
- BUEHL, B. and H.K. MACWILLIAMS (1991). Cell sorting within the prestalk zone of *Dictyostelium discoideum*. *Differentiation* 46: 147-152.
- BÜRGLIN, T.R., G. RUVKUN, A. COULSON, N.C. HAWKINS, J.D. MCGHEE, D. SCHALLER, C. WITTMANN, F. MÜLLER and R.H. WATERSTON (1991). Nematode homeobox cluster. *Nature* 351: 703.

- BURGOYNE, R.D. (ed.) (1991). *The Neuronal Cytoskeleton*. Wiley-Liss, New York. 334 pp.
- CAIRNEY, J.W.G. (1992). Translocation of solutes in ectomycorrhizal and saprotrophic rhizomorphs. *Mycol. Res.* 96: 135-141.
- CAMERON, D.A. and E.N. PUGH Jr (1991). Double cones as a basis for a new type of polarization vision in vertebrates. *Nature* 353: 161-164.
- CAPLOW, M. (1992). Microtubule dynamics. *Curr. Opin. Cell Biol.* 4: 58-65.
- CASANOVA, J. (1991). Interaction between *torso* and *dorsal*, two elements of different transduction pathways in the *Drosophila* embryo. *Mechan. Develop.* 36: 41-45.
- CASANOVA, J.E., G. APODACA and K.E. MOSTOV (1991). An autonomous signal for basolateral sorting in the cytoplasmic domain of the polymeric immunoglobulin receptor. *Cell* 66: 65-75.
- CECARELLI, A., H. MAHBUBANI and J.G. WILLIAMS (1991). Positively and negatively acting signals regulating stalk cell and anterior-like cell differentiation in *Dictyostelium*. *Cell* 65: 983-989.
- CHANT, J. and I. HERSKOWITZ (1991). Genetic control of bud site selection in yeast by a set of gene products that constitute a morphogenetic pathway. *Cell* 65: 1203-1212.
- CHANT, J., K. CORRADO, J.R. PRINGLE and I. HERSKOWITZ (1991). Yeast *BUD5*, encoding a putative GDP-GTP exchange factor, is necessary for bud site selection and interacts with bud formation gene *BEM1*. *Cell* 65: 1213-1224.
- CHEN, M.S., R.A. OBAR, C.C. SCHROEDER, T.W. AUSTIN, C.A. POODRY, S.C. WADSWORTH and R.B. VALLEE (1991). Multiple forms of dynamin are encoded by *shibire*, a *Drosophila* gene involved in endocytosis. *Nature* 351: 583-586.
- CHENEVERT, J., K. CORRADO, A. BENDER, J. PRINGLE and I. HERSKOWITZ (1992). A yeast gene (*BEMS1*) necessary for cell polarization whose product contains two SH3 domains. *Nature* 356: 77-79.
- CHU, S. (1992). Laser trapping of neutral particles. *Sci. Amer.* 266(2): 49-54.
- CLEVELAND, D.W. and P.N. HOFFMAN (1991). Slow axonal transport models come full circle: evidence that microtubule sliding mediates axon elongation and tubulin transport. *Cell* 67: 453-456.
- COEN, E.S. and E.M. MEYEROWITZ (1991). The war of the whorls: genetic interactions controlling flower development. *Nature* 353: 31-37.
- COLUCCIO, L.M. (1991). Identification of the microvillar 110-kDa calmodulin complex (myosin-1) in kidney. *Eur. J. Cell Biol.* 56: 286-294.
- COOK, P.R. (1991). The nucleoskeleton and the topology of replication. *Cell* 66: 627-635.
- CORCORAN, E. (1991). Memorable revival. Will ferroelectrics finally move out of the laboratory? *Sci. Amer.* 265(1): 87-88.
- CREIGHTON, T.E. (1991). Unfolding protein folding. *Nature* 352: 17-18.
- CRUTCHFIELD, J.P., J.D. FARMER, N.H. PACKARD and R.S. SHAW (1986). Chaos. *Sci. Amer.* 255(6): 38-49.
- CYPHER, C. and P.C. LETOURNEAU (1992). Growth cone motility. *Curr. Opin. Cell Biol.* 4: 4-7.
- CZIHAK, G., M. KOJIMA, J. LINHART and H. VOGEL (1991). Multipolar mitosis in procaine-treated polyspermic sea urchin eggs and in eggs fertilized with UV-irradiated spermatozoa with a computer model to simulate the positioning of centrosomes. *Eur. J. Cell Biol.* 55: 255-261.
- DEAN, N. and H.R.B. PELHAM (1990). Recycling of proteins from the Golgi compartment to the ER in yeast. *J. Cell Biol.* 111: 369-377.
- DE HOSTOS, E.L., B. BRADTKE, F. LOTTSPEICH, R. GUGGENHEIM and G. GERISCH (1991). Coronin, an actin binding protein of *Dictyostelium discoideum* localized to cell surface projections, has sequence similarities to G protein β subunits. *EMBO. J.* 10: 4097-4104.
- DEISENHOFER, J. and H. MICHEL (1991). Structures of bacterial photosynthetic reaction centers. *Ann. Rev. Cell Biol.* 7: 1-23.
- D'ENFERT, C., L.J. WUESTHUBE, T. LILA and R. SCHEKMAN (1991). Sec12p-dependent membrane binding of the small GTP-binding protein Sarlp promotes formation of transport vesicles from the ER. *J. Cell Biol.* 114: 663-670.
- DICKSON, J.A.D. (1991). Disequilibrium carbon and oxygen isotope variations in natural calcite. *Nature* 353: 842-844.

- DILL, K.A. (1990). Dominant forces in protein folding. *Biochemistry* 29: 7133-7155.
- DI VINCENZO, D.P. and P.J. STEINHARDT (eds) (1991). The State of the Art. Directions in Condensed Matter Physics, vol. 11. World Scientific, Teaneck, N.J. 524 pp.
- DOLLÉ, P., J.-C. IZPISUA-BELMONTE, E. BONCINELLI and D. DUBOULE (1991). The Hox-4.8 gene is localized at the 5' extremity of the Hox-4 complex and is expressed in the most posterior parts of the body during development. *Mechan. Develop.* 36: 3-13.
- DRENCKHAHN, D. (1992). The role of microtubules and membrane cytoskeleton in maintenance and generation of epithelial polarity. *Eur. J. Cell Biol. Suppl.* 36, vol. 57: 16.
- DREWS, G.N., J.L. BOWMAN and E.M. MEYEROWITZ (1991). Negative regulation of the *Arabidopsis* homeotic gene *agamous* by the *apetala2* product. *Cell* 65: 991-1002.
- DROUFFE, J.-M., A.C. MAGGS and S. LEIBLER (1991). Computer simulations of self-assembled membranes. *Science* 254: 1353-1356.
- DRUBIN, D.G. (1991). Development of cell polarity in budding yeast. *Cell* 65: 1093-1096.
- DURAND-SCHNEIDER, A.-M., J.-C. BOUANGA, G. FELDMANN and M. MAURICE (1991). Microtubule disruption interferes with the structural and functional integrity of the apical pole in primary cultures of rat hepatocytes. *Eur. J. Cell Biol.* 56: 260-268.
- DUSTIN, P. (1978). Microtubules. Springer-Verlag, Berlin, New York. 452 pp.
- EHRHARDT, D.W., E.M. ATKINSON and S.R. LONG (1992). Depolarization of alfalfa root hair membrane potential by *Rhizobium meliloti* Nod factors. *Science* 256: 998-1000.
- EILERS, U., J. KLUMPERMAN and H.-P. HAURI (1989). Nocodazole, a microtubule-active drug, interferes with apical protein delivery in cultured intestinal epithelial cells (Caco-2). *J. Cell Biol.* 108: 13-22.
- EINSTEIN, A. (1917). Zum Quantensatz von Sommerfeld und Epstein. *Ver. Deut. Phys. Ges.* 19: 82-92.
- ELINSON, R.P. (1990). Cytoskeleton and embryo polarity. *Curr. Opin. Cell Biol.* 2: 75-79.
- EMONS, A.M.C., J. DERKSEN and M.M.A. SASSEN (1992). Do microtubules orient plant cell wall microfibrils? *Physiol. Plant.* 84: 486-493.
- EPHRUSSI, A., L.K. DICKSON and R. LEHMANN (1991). Oskar organizes the germ plasm and directs localization of the posterior determinant *nanos*. *Cell* 66: 37-50.
- ETTL, H. (1988). Zellteilung und Sporulation als wichtige Unterscheidungsmerkmale bei Grünalgen (Chlorophyta). *Arch. Protistenkunde* 135: 103-118.
- FARR, C.M., M. COUE, P.M. GRISSOM, T.M. HAYS, M.E. PORTER and J.R. MCINTOSH (1990). Cytoplasmic dynein is localized to kinetochores during mitosis. *Nature* 345: 263-265.
- FIRN, R.D. and J. DIGBY (1980). The establishment of tropic curvatures in plants. *Ann. Rev. Plant Physiol.* 31: 131-148.
- FLAM, F. (1991). A long look into a liquid crystal ball. *Science* 252: 649-650.
- FORD, S.K. and J.R. PRINGLE (1991). Cellular morphogenesis in the *Saccharomyces cerevisiae* cell cycle: localization of the CDC11 gene product and the timing of events at the budding site. *Dev. Genet.* 12(4): 281-292.
- FREEDMAN, D.H. (1991). Concocting a cosmic recipe for matter. *Science* 254: 382-383.
- FUKUGITA, M. and C.J. HOGAN (1991). Quark soup: do not boil. *Nature* 354: 17-18.
- FUKUI, Y., J. LEBLANC, L. LEINWAND, T. EGELHOFF and J.A. SPUDICH (1991). Myosin organization center in *Dictyostelium*: possible role in the determination of cell polarity. *J. Cell Biol.* 115(3 Part 2): 182a.
- GARAY, A.S. and J.A. AHLGREN-BECKENDORF (1990). Differential interaction of chiral β -particles with enantiomers. *Nature* 346: 451-453.
- GAY, N.J. and F.J. KEITH (1991). *Drosophila* Toll and IL-1 receptor. *Nature* 351: 355-356.
- GELFAND, V.I. and A.D. BERSHADSKY (1991). Microtubule dynamics: mechanism, regulation, and function. *Ann. Rev. Cell Biol.* 7: 93-116.
- GETHING, M.-J. and J. SAMBROOK (1992). Protein folding in the cell. *Nature* 355: 33-45.
- GIBBON, B.C. and D.L. KROPF (1991). pH gradients and cell polarity in *Pelvetia* embryos. *Protoplasma* 163: 43-50.

- GIMENO, C.J., P.O. LJUNGAHL, C.A. STYLES and G.R. FINK (1992). Unipolar cell divisions in the yeast *S. cerevisiae* lead to filamentous growth: regulation by starvation and RAS. *Cell* 68: 1077-1090.
- GINZBURG, I. (1991). Neuronal polarity: targeting of microtubule components into axons and dendrites. *Trends Biochem. Sci.* 16: 257-261.
- GLEICK, J. (1988). Chaos: Making a New Science. Viking, New York. 352 pp.
- GOLDANSKII, V.I. (1979). Facts and hypotheses of molecular chemical tunnelling. *Nature* 279: 109-115.
- GOLDANSKII, V.I. and V.V. KUZMIN (1991). Chirality and cold origin of life. *Nature* 352: 114.
- GOLDSTEIN, L.S.B. and R.D. VALE (1991). A brave new world for dynein. *Nature* 352: 569-570.
- GOLLNICK, F., R. MEYER and W. STOCKEM (1991). Visualization and measurement of calcium transients in *Amoeba proteus* by fura-2 fluorescence. *Eur. J. Cell Biol.* 55: 262-271.
- GOULD, S.J., G.-A. KELLER, N. HOSKEN, J. WILKINSON and S. SUBRAMANI (1989). A conserved tripeptide sorts proteins to peroxisomes. *J. Cell Biol.* 108: 1657-1664.
- GRAY, P. and S.K. SCOTT (1990). Chemical Oscillations and Instabilities. Non-Linear Chemical Kinetics. Clarendon Press, Oxford. 453 pp.
- GRENNINGLOH, G., E.J. REHM and C.S. GOODMAN (1991). Genetic analysis of growth cone guidance in *Drosophila*: fasciclin II functions as a neuronal recognition molecule. *Cell* 67: 45-57.
- GRESIK, M., N. KOLAROVA and V. FARKAS (1991). Hyperpolarization and intracellular acidification in *Trichoderma viride* as a response to illumination. *J. Gen. Microbiol.* 137: 2605-2610.
- GRUEN, H.E. (1991). Effects of grafting on stipe elongation and pileus expansion in the mushroom *Flammulina velutipes*. *Mycologia* 83: 480-491.
- GRULER, H. and N.A.R. GOW (1990). Directed growth of fungal hyphae in an electric field. *Z. Naturforsch.* 45c: 306-313.
- GUMBINER, B. (1990). Generation and maintenance of epithelial cell polarity. *Curr. Opin. Cell Biol.* 2: 881-887.
- GUNDERSEN, D., J. ORLOWSKI and E. RODRIGUEZ-BOULAN (1991). Apical polarity of Na, K-ATPase in retinal pigment epithelium is linked to a reversal of the ankyrin-fodrin submembrane cytoskeleton. *J. Cell Biol.* 112: 863-872.
- GUPTA, R.S. (1990). Mitochondria, molecular chaperone proteins and the in vivo assembly of microtubules. *Trends Biochem. Sci.* 15: 415-418.
- GURDON, J.B. (1992). The generation of diversity and pattern in animal development. *Cell* 68: 185-199.
- GUSTIN, M.C., X.-L. ZHOU, B. MARTINAC and C. KUNG (1988). A mechanosensitive ion channel in the yeast plasma membrane. *Science* 243: 762-765.
- GUTZWILLER, M.C. (1992). Quantum chaos. *Sci. Amer.* 266(1): 26-32.
- GYÖRGYI, L. and R.J. FIELD (1992). A three-variable model of deterministic chaos in the Belousov-Zhabotinsky reaction. *Nature* 255: 808-810.
- HAFEN, E. and K. BASLER (1991). Specification of cell fate in the developing eye of *Drosophila*. *Development (Suppl.)* 1: 123-130.
- HAGAN, I. and M. YANAGIDA (1992). Kinesin-related cut7 protein associated with mitotic and meiotic spindles in fission yeast. *Nature* 356: 74-76.
- HALL, D.H. and E.M. HEDGECOCK (1991). Kinesin-related gene *unc-104* is required for axonal transport of synaptic vesicles in *C. elegans*. *Cell* 65: 837-847.
- HALSTEAD, T.W. and F.R. DUTCHER (1987). Plants in space. *Ann. Rev. Plant Physiol.* 38: 317-345.
- HAMILTON, D.P. (1991). A tentative vote for supersymmetry. *Science* 253: 272.
- HAMMERTON, R.W., K.A. KRZEMINSKI, R.W. MAYS, T.A. RYAN, D.A. WOLLNER and W.J. NELSON (1991). Mechanism for regulating cell surface distribution of Na⁺, K⁺-ATPase in polarized epithelial cells. *Science* 254: 847-850.
- HANN, B.C. and P. WALTER (1991). The signal recognition particle in *S. cerevisiae*. *Cell* 67: 131-144.
- HARRISON, S.C. (1991). A structural taxonomy of DNA-binding domains. *Nature* 353: 715-719.
- HARTWELL, L. (1991). Pathways of morphogenesis. *Nature* 352: 663-664.

- HAWKING, S.W. (1990). A Brief History of Time. From the Big Bang to Black Holes. Bantam Books, New York. 198 pp.
- HEATH, J. and B. HOLIFIELD (1991). Actin alone in lamellipodia. *Nature* 352: 107-108.
- HEBARD, A.F., M.J. ROSSEINSKY, R.C. HADDON, D.W. MURPHY, S.H. GLARUM, T.T.M. PALSTRA, A.P. RAMIREZ and A.R. KORTAN (1991). Superconductivity at 18 K in potassium-doped C₆₀. *Nature* 350: 600-601.
- HEICHMAN, K.A. and R.C. JOHNSON (1990). The Hin invertasome: protein-mediated joining of distant recombination sites at the enhancer. *Science* 249: 511-517.
- HENQUIN, J.C. and H.P. MEISSNER (1984). Significance of ionic fluxes and changes in membrane potential for stimulus-secretion coupling in pancreatic B-cells. *Experientia* 40: 1043-1052.
- HERTH, W., H.-D. REISS and E. HARTMANN (1990). Role of calcium ions in tip growth of pollen tubes and moss protonema cells. In *Tip Growth in Plant and Fungal Cells*. Pp. 91-118. I.B. Heath (ed.), Academic Press, New York. 351 pp.
- HIDALGO, A. (1991). Interactions between segment polarity genes and the generation of the segmental pattern in *Drosophila*. *Mechan. Develop.* 35: 77-87.
- HO, T.-L. (1991). Polarity Control for Synthesis. John Wiley & Sons, New York. 416 pp.
- HODGKIN, A.L. and A.F. HUXLEY (1952). A quantitative description of membrane current and its application to conduction and excitation in nerve. *J. Physiol.* 117: 500-544.
- HOFFMAN, K.A. (1988). Ancient magnetic reversals: clues to the geodynamo. *Sci. Amer.* 258(5): 50-59.
- HOFFMAN, M. (1991a). A new role for gases: neurotransmission. *Science* 252: 1788.
- (1991b). Playing tag with membrane proteins. *Science* 254: 650-651.
- HOFFMEISTER, S.A.H. (1991). Analysis of a foot regeneration deficient strain of *Hydra oligactis*. *Mechan. Develop.* 35: 181-192.
- HOKE, F. (1992). "Smart" materials research expands beyond defense arena. *The Scientist* 6(9): 13:3.
- HOLSTEIN, B.R. (1991). Nucleons just yield to pressure. *Nature* 354: 189-190.
- HOPKINS, C.R. (1991). Polarity signals. *Cell* 66: 827-829.
- (1992). Selective membrane protein trafficking: vectorial flow and filter. *Trends Biochem. Sci.* 17: 27-32.
- HORGAN, J. (1991). Profile: Edward Witten. The pied piper of superstrings. *Sci. Amer.* 265(5): 18-20.
- HORVITZ, H.R. and I. HERSKOWITZ (1992). Mechanisms of asymmetric cell division: two Bs or not to Bs, that is the question. *Cell* 68: 237-255.
- HÜBSCHER, U. and P. THÖMMES (1992). DNA polymerase ϵ : in search of a function. *Trends Biochem. Sci.* 17: 55-58.
- HUGHES, R. (1991). Antihydrogen in a new light. *Nature* 353: 700-701.
- HUNZIKER, W., C. HARTER, K. MATTER and I. MELLMAN (1991). Basolateral sorting in MDCK cells requires a distinct cytoplasmic domain determinant. *Cell* 66: 907-920.
- HYMAN, A.A. (1989). Centrosome movement in the early divisions of *Caenorhabditis elegans*: a cortical site determining centrosome position. *J. Cell Biol.* 109: 1185-1193.
- HYMAN, A.A. and J.G. WHITE (1987). Determination of cell division axes in the early embryogenesis of *Caenorhabditis elegans*. *J. Cell Biol.* 105: 2123-2135.
- INGHAM, P.W. (1990). The X, Y, Z of head development. *Nature* 346: 412-413.
- INGHAM, P.W. and A. MARTINEZ ARIAS (1992). Boundaries and fields in early embryos. *Cell* 68: 221-235.
- INGHAM, P.W., A.M. TAYLOR and Y. NAKANO (1991). Role of the *Drosophila patched* gene in positional signalling. *Nature* 353: 184-187.
- ISHIJIMA, A., T. DOI, K. SAKURADA and T. YANAGIDA (1991). Sub-piconewton force fluctuations of actomyosin *in vitro*. *Nature* 352: 301-306.
- JACKSON, S.L. and I.B. HEATH (1989). Effects of exogenous calcium ions on tip growth, intracellular Ca²⁺ concentration, and actin arrays in hyphae of the fungus *Saprolegnia ferax*. *Exp. Mycol.* 13: 1-12.

- (1990). Evidence that actin reinforces the extensible hyphal apex of the oomycete *Saprolegnia ferax*. *Protoplasma* 157: 144-153.
- JANOSCHEK, R. (ed.) (1991). Chirality - From Weak Bosons to the Alpha-Helix. Springer-Verlag, Wien, New York. 239 pp.
- JENSEN, C.G., S.M. BOLLARD and U.-P. ROOS (1991). Analysis of microtubule arms and bridges in mitotic and interphase amoebae of *Dictyostelium discoideum*. *Eur. J. Cell Biol.* 54: 121-131.
- JOHNSTON, G.C., J.A. PRENDERGAST and R.A. SINGER (1991). The *Saccharomyces cerevisiae* MYO2 gene encodes an essential myosin for vectorial transport of vesicles. *J. Cell Biol.* 113: 539-551.
- JÜRGENS, G., U. MAYER, R.A. TORRES RUIZ, T. BERLETH and S. MISÉRA (1991). Genetic analysis of pattern formation in the *Arabidopsis* embryo. *Development (Suppl.)* 1: 27-38.
- KATZ, H.E., G. SCHELLER, T.M. PUTVINSKI, M.L. SCHILLING, W.L. WILSON and C.E.D. CHIDSEY (1991). Polar orientation of dyes in robust multilayers by zirconium phosphate-phosphonate interlayers. *Science* 254: 1485-1487.
- KAUFFMAN, S.A. (1991). Antichaos and adaptation. *Sci. Amer.* 265(2): 64-70.
- KELLER, G.-A., S. KRISANS, S.J. GOULD, J.M. SOMMER, C.C. WANG, W. SCHLIEBS, W. KUNAU, S. BRODY and S. SUBRAMANI (1991). Evolutionary conservation of a microbody targeting signal that targets proteins to peroxisomes, glyoxysomes, and glycosomes. *J. Cell Biol.* 114: 893-904.
- KENYON, C. and B. WANG (1991). A cluster of *Antennapedia*-class homeobox genes in a nonsegmented animal. *Science* 253: 516-517.
- KERN, V., J. MONZER, K. DRESSEL and B. HOCK (1991). Graviperception and gravimorphogenesis in fungi. In *Forschung unter Weltraumbedingungen*. H. Binnenbruck and J. Richter (eds), DARA Symposium 1991, Aaren.
- KIM-HA, J., J.L. SMITH and P.M. MACDONALD (1991). *Oskar* mRNA is localized to the posterior pole of the *Drosophila* oocyte. *Cell* 66: 23-35.
- KIRK, D.L., M.R. KAUFMAN, R.M. KEELING and K.A. STAMER (1991). Genetic and cytological control of the asymmetric divisions that pattern the *Volvox* embryo. *Development (Suppl.)* 1: 67-82.
- KOERT, U., M.M. HARDING and J.-M. LEHN (1990). DNH deoxyribonucleohelicates: self assembly of oligonucleosidic double-helical metal complexes. *Nature* 346: 339-342.
- KOSHLAND, D. (1991). Molecular mechanisms of mitosis. *Year Book 90, Carnegie Institution of Washington*, pp. 121-127.
- KOSHLAND Jr, D.E. (1991). Molecule of the year. *Science* 254: 1705.
- KUZNETSOV, S.A., G.M. LANGFORD and D.G. WEISS (1992). Actin-dependent organelle movement in squid axoplasm. *Nature* 356: 722-725.
- KWON, Y.H. and H.C. HOCH (1991). Temporal and spatial dynamics of appressorium formation in *Uromyces appendiculatus*. *Exp. Mycol.* 15: 116-131.
- LASEK, R.J. and P.N. HOFFMAN (1976). The neuronal cytoskeleton, axonal transport and axonal growth. In *Cell Motility*. Vol. 3, pp. 1021-1049. R. Goldman, T. Pollard, J. Rosenbaum (eds), Cold Spring Harbor Lab. Press, Cold Spring Harbor, N.Y.
- LAWRENCE, P.A. (1966). Gradients in the insect segment: the orientation of hairs in the weed bug *Oncopeltus fasciatus*. *J. Exp. Biol.* 49: 607-620.
- LEGUÉ, V., D. DRISS-ECOLE and G. PERBAL (1992). Cell cycle and cell differentiation in lentil roots grown on a slowly rotating clinostat. *Physiol. Plant.* 84: 386-392.
- LETOURNEAU, P.C., S.B. KATER and E.R. MACAGNO (eds) (1991). The Nerve Growth Cone. Raven Press, New York.
- LEW, D.J. and S.M. SIMON (1991). Characterization of constitutive exocytosis in the yeast *Saccharomyces cerevisiae*. *J. Membrane Biol.* 123: 261-268.
- LI, D.Q., M.A. RATNER, T.J. MARKS, C.H. ZHANG, J. YANG and G.K. WONG (1990). Chromophoric self-assembled multilayers. Organic superlattice approaches to thin-film nonlinear optical materials. *J. Am. Chem. Soc.* 112: 7389-7390.
- LIN, J.C. (ed.) (1989). Electromagnetic Interaction with Biological Systems. Plenum Press, New York.

- LINDSEY, K. and M.G.K. JONES (1990). Electroporation of cells. *Physiol. Plant.* 79: 168-172.
- LINGAPPA, V.R. (1991). More than just a channel: provocative new features of protein traffic across the ER membrane. *Cell* 65: 527-530.
- LIPPINCOTT-SCHWARTZ, J., L. YUAN, C. TIPPER, M. AMHERDT, L. ORCI and R.D. KLAUSNER (1991). Brefeldin A's effects on endosomes, lysosomes, and the TGN suggest a general mechanism for regulating organelle structure and membrane traffic. *Cell* 67: 601-616.
- LIPSHITZ, H.D. (1991). Axis specification in the *Drosophila* embryo. *Curr. Opin. Cell Biol.* 3: 966-975.
- LOPEZ, S.L. and A.E. CARRASCO (1992). Retinoic acid induces changes in the localization of homeobox proteins in the antero-posterior axis of *Xenopus laevis* embryos. *Mechan. Develop.* 36: 153-164.
- LUPAS, A., M. VAN DYKE and J. STOCK (1991). Predicting coiled coils from protein sequences. *Science* 252: 1162-1164.
- MACRAE, T.H., C.M. LANGDON and J.A. FREEMAN (1991). Spatial distribution of posttranslationally modified tubulins in polarized cells of developing *Artemia*. *Cell Motil. Cytoskel.* 18: 189-203.
- MAHOWALD, M. and R. DOUGLAS (1991). A silicon neuron. *Nature* 354: 515-518.
- MAIRE, P., J. WUARIN and U. SCHIBLER (1989). The role of cis-acting elements in tissue-specific albumin gene transcription. *Science* 244: 343-346.
- MANIOTIS, A. and M. SCHLIWA (1991). Microsurgical removal of centrosomes blocks cell reproduction and centriole generation in BSC-1 cells. *Cell* 67: 495-504.
- MANSEAU, L.J. and T. SCHÜPBACH (1989). The egg came first, of course! *Trends Genet.* 5: 400-405.
- MARO, B., C. GUETH-HALLONET, J. AGHION and C. ANTONY (1991). Cell polarity and microtubule organisation during mouse early embryogenesis. *Development (Suppl.)* 1: 17-25.
- MARSZALEK, P., J.J. ZIELINSKY, M. FIKUS and T.Y. TSONG (1991). Determination of electric parameters of cell membranes by a dielectrophoresis method. *Biophys. J.* 59: 982-987.
- MATTER, K., M. BRAUCHBAR, K. BUCHER and H.-P. HAURI (1990). Sorting of endogenous plasma membrane proteins occurs from two sites in cultured human intestinal epithelial cells (Caco-2). *Cell* 60: 429-437.
- MAYER, U., R.A. TORRES RUIZ, T. BERLETH, S. MISÉRA and G. JÜRGENS (1991). Mutations affecting body organization in the *Arabidopsis* embryo. *Nature* 353: 402-407.
- MCBRIDE, J.M. (1992). Crystal polarity: a window on ice nucleation. *Nature* 256: 814.
- MCCAIG, C.D. (1986). Electric fields, contact guidance and the direction of nerve growth. *J. Embryol. Exp. Morphol.* 94: 245-255.
- MCGINNIS, W. and R. KRUMLAUF (1992). Homeobox genes and axial patterning. *Cell* 68: 283-302.
- MCPHERSON, A. (1989). Macromolecular crystals. *Sci. Amer.* 260:(3): 42-49.
- MEINDL, J.D. (1987). Chips for advanced computing. *Sci. Amer.* 257:(4) 54-62.
- MEISSNER, H.P. (1976). Electrical characteristics of the beta-cells in pancreatic islets. *J. Physiol. (Paris)* 72: 757-767.
- MELLMAN, I. and K. SIMONS (1992). The Golgi complex: in vitro veritas? *Cell* 68: 829-840.
- MEYEROWITZ, E.M. (1991). Abnormal developments. *Nature* 353: 385-386.
- MILLER, C. (1991). 1990: Annus mirabilis of potassium channels. *Science* 252: 1092-1096.
- MILLER, D.B., D.A. CALLAHAM, D.J. GROSS and P.K. HEPLER (1992). Free Ca²⁺ gradient in growing pollen tubes of *Lilium*. *J. Cell Sci.* 101: 7-12.
- MIYAKE, Y., M. YANO and H. SHIMIZU (1991). Relationship between endoplasmic and ectoplasmic oscillations during chemotaxis of *Physarum polycephalum*. *Protoplasma* 162: 175-181.
- MONTELL, D.J., H. KESHISHIAN and A.C. SPRADLING (1991). Laser ablation studies of the role of the *Drosophila* oocyte nucleus in pattern formation. *Science* 254: 290-293.
- MONZER, J., V. KERN and B. HOCK (1992). Gravitropic responses in the basidiomycete *Flammulina velutipes*: involvement of the cytoskeletal elements. *Eur. J. Cell Biol. Suppl.* 36, vol. 57: 55.
- MOORE, D. (1991a). Perception and responses to gravity in higher fungi: a critical appraisal. *New Phytol.* 117: 3-23.

- (1991b). Mushrooms in microgravity. Mycology at the final frontier. *The Mycologist* 5(1): 11-18.
- MORIYOSHI, K., M. MASU, T. ISHII, R. SHIGEMOTO, N. MIZUNO and S. NAKANISHI (1991). Molecular cloning and characterization of the rat NMDA receptor. *Nature* 354: 31-37.
- MOROSOV, L. (1979). Mirror symmetry breaking in biochemical evolution. *Origins of Life* 9: 187-217.
- MOWRY, K.L. and D.A. MELTON (1992). Vegetal messenger RNA localization directed by a 340-nt RNA sequence element in *Xenopus* oocytes. *Science* 255: 991-994.
- MUMMERT, H. and D. GRADMANN (1991). Action potentials in *Acetabularia*: measurement and simulation of voltage-gated fluxes. *J. Membrane Biol.* 124: 265-273.
- NAKAMOTO, R.K., R. RAOS and C.W. SLAYMAN (1991). Expression of the yeast plasma membrane [H⁺]ATPase in secretory vesicles. *J. Biol. Chem.* 266: 7940-7949.
- NARDI, J.B. and F.C. KAFATOS (1976). Polarity and gradients in lepidopteran wing epidermis. II. The differential adhesiveness model: gradient of a non-diffusible cell surface parameter. *J. Embryol. Exp. Morphol.* 136: 489-512.
- NAMBU, Y. (1992). A matter of symmetry. Elementary particles and the origin of mass. *The Sciences* May/June: 37-43.
- NEHER, E. and B. SAKMANN (1992). The patch clamp technique. *Sci. Amer.* 266(3): 28-35.
- NIGG, E.A., P.A. BAEURLE and R. LÜHRMANN (1991). Nuclear import-export: in search of signals and mechanisms. *Cell* 66: 15-22.
- NISHIKAWA, S.-I. and A. NAKANO (1991). The GTP-binding SAR1 protein is localized to the early compartment of the yeast secretory pathway. *Biochim. Biophys. Acta* 1093: 135-143.
- NOVICK, P. and R. SCHEKMAN (1979). Secretion and cell-surface growth are blocked in a temperature-sensitive mutant of *Saccharomyces cerevisiae*. *Proc. Natl. Acad. Sci. U.S.A.* 76: 1858-1862.
- NOVICK, P., B.C. OSMOND and D. BOTSTEIN (1989). Suppressors of yeast actin mutations. *Genetics* 121: 659-674.
- NÜBLER-JUNG, K. and B. MARDINI (1990). Insect epidermidis: polarity patterns after grafting result from divergent cell adhesions between host and graft tissue. *Development* 110: 1071-1079.
- NÜBLER-JUNG, K. and S. ESCHBACH (1992). Planar polarity: a second polarity axis in epidermal cells. *Eur. J. Cell Biol. Suppl.* 36, vol. 57: 59.
- NÜBLER-JUNG, K., R. BONITZ and M. SONNENSCHNEIN (1987). Cell polarity during wound healing in an insect epidermidis. *Development* 100: 163-170.
- NUCCITELLI, R. (1988). Physiological electric fields can influence cell motility, growth, and polarity. *Adv. Cell Biol.* 2: 213-233.
- NUMANN, R., W.A. CATTERALL and T. SCHEUER (1991). Functional modulation of brain sodium channels by protein kinase C phosphorylation. *Science* 254: 115-118.
- NÜSSLEIN-VOLHARD, C. (1991). Determination of the embryo axes of *Drosophila*. *Development (Suppl.)* 1: 1-10.
- NÜSSLEIN-VOLHARD, C. and S. ROTH (1989). Axis determination in insect embryos. Cellular basis of morphogenesis. *Ciba Found. Symp.* 144: 37-55.
- O'REGAN, B. and M. GRÄTZEL (1991). A low-cost, high-efficiency solar cell based on dye-sensitized colloidal TiO₂ films. *Nature* 353: 737-740.
- OBERMEYER, G. and M.H. WEISENSEELE (1991). Calcium channel blocker and calmodulin antagonists affect the gradient of free calcium ions in lily pollen tubes. *Eur. J. Cell Biol.* 56: 319-327.
- OKABE, S. and N. HIROKAWA (1990). Turnover of fluorescently labelled tubulin and actin in the axon. *Nature* 343: 479-482.
- OLSSON, S. and D.H. JENNINGS (1991). Evidence for diffusion being the mechanism of translocation in the hyphae of three molds. *Exp. Mycol.* 15: 303-309.
- ORGEL, L.E. (1992). Molecular replication. *Nature* 358: 203-209.
- ORLOWSKI, M. (1991). *Mucor* dimorphism. *Microbiol. Rev.* 55: 234-258.
- ORTEGA PEREZ, R. and G. TURIAN (1987). Cytomorphological defects produced by anti-calmodulin agents in outgrowing germ tubes and elongating hyphae of *Neurospora crassa*. *Cytobios* 49: 137-145.

- PALCZEWSKI, K. and J.L. BENOVIĆ (1991). G-protein-coupled receptor kinases. *Trends Biochem. Sci.* 16: 387-391.
- PALMGREN, M.G. (1991). Regulation of plant plasma membrane H⁺-ATPase activity. *Physiol. Plant.* 83: 314-323.
- PALMGREN, M.G., C. LARSSON and M. SOMMARIN (1990). Proteolytic activation of the plant plasma membrane H⁺-ATPase by removal of a terminal segment. *J. Biol. Chem.* 265: 13423-13426.
- PANKRATZ, M.J., M. BUSCH, M. HOCH, E. SEIFERT and H. JÄCKLE (1992). Spatial control of the gap gene *knirps* in the *Drosophila* embryo by posterior morphogen system. *Science* 255: 986-989.
- PENROSE, R. (1989). The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics. Oxford Univ. Press, Oxford, New, York. 466 pp.
- PICKETT, W.E., H. KRAKAUER, R.E. COHEN and D.J. SINGH (1992). Fermi surfaces, fermi liquids, and high-temperature superconductors. *Science* 255: 46-54.
- PODACK, E.R. and A. KUPFER (1991). T-cell effector functions: mechanisms for delivery of cytotoxicity and help. *Ann. Rev. Cell Biol.* 7: 479-504.
- POLLARD, T.D. and R.D. GOLDMAN (1992). Cytoplasm and Cell motility. *Curr. Opin. Cell Biol.* 4: 1-3.
- POTAPOVA, T.V., K.B. ASLANIDI, T.A. BELOZERSKAYA and N.N. LEVINA (1988). Transcellular ionic currents studied by intracellular potential recordings in *Neurospora crassa* hyphae. *FEBS Lett.* 241: 173-176.
- POWELL, S.K., B.A. CUNNINGHAM, G.M. EDELMAN and E. RODRIGUEZ-BOULAN (1991). Targeting of transmembrane and GPI-anchored forms of N-CAM to opposite domains of a polarized epithelial cell. *Nature* 353: 76-77.
- QUATRANO, R.S., L. BRIAN, J. ALDRIDGE and T. SCHULTZ (1991). Polar axis fixation in *Fucus* zygotes: components of the cytoskeleton and extracellular matrix. *Development (Suppl.)* 1: 11-16.
- RACUSEN, R.H., K.A. KETCHUM and T.J. COOKE (1988). Modifications of extracellular electric and ionic gradients preceding the transition from tip growth to isodiametric expansion in the apical cell of the fern gametophyte. *Plant Physiol.* 87: 69-77.
- RATHJEN, F.G. (1991). Neural cell contact and axonal growth. *Curr. Opin. Cell Biol.* 3: 992-1000.
- RATHORE, K.S., R.J. CORK and K.R. ROBINSON (1991). A cytoplasmic gradient of Ca²⁺ is correlated with the growth of Lily pollen tubes. *Develop. Biol.* 148: 612-619.
- RAUDASKOSKI, M., V. SALO and S.S. NIINI (1988). Structure and function of the cytoskeleton in filamentous fungi. *Karstenia* 28: 49-60.
- RAUDASKOSKI, M., I. RUPES and S. TIMONEN (1991). Immunofluorescence microscopy of the cytoskeleton in filamentous fungi after quick-freezing and low temperature fixation. *Exp. Mycol.* 15: 167-173.
- REBEK, J., IN NOWICK, J., FENG, Q., TIJIVQUA, T., BALLESTER, P. and REBEK, J., Jr (1991) *J. Am. chem. Soc.* 113: 8831-8839 and FENG, Q., PARK, T.Q., and REBEK, J., Jr (1992) *Science*: 254: 1179-1180.
- REBHUN, L.I. (1972). Polarized intracellular particle transport: saltatory movements and cytoplasmic streaming. *Int. Rev. Cytol.* 32: 93-137.
- REES, D.C., L. DEANTONIO and D. EISENBERG (1989). Hydrophobic organization of membrane proteins. *Science* 245: 510-513.
- REID, G.A. (1991). Protein targeting in yeast. *J. Gen. Microbiol.* 137: 1765-1773.
- REID, L. (1990). From gradients to axes, from morphogenesis to differentiation. *Cell* 63: 875-882.
- REINSCH, S.S., T.J. MITCHISON and M. KIRSCHNER (1991). Microtubule polymer assembly and transport during axonal elongation. *J. Cell Biol.* 115: 365-379.
- REISS, H.D. and R. NOBILING (1986). Quin-2 fluorescence in lily pollen tubes: distribution of free cytoplasmic calcium. *Protoplasma* 131: 244-246.
- REXACH, M.F. and R.W. SCHEKMAN (1991). Distinct biochemical requirements for the budding targeting, and fusion of ER-derived transport vesicles. *J. Cell Biol.* 114: 219-230.
- RIDDIHOUGH, G. (1992). Homing in on the homeobox (EMBO Workshop, Ascona, Switzerland, May 1992). *Nature* 357: 643-644.

- RIDENOUR, L.N. (1955). Computer memories. *Sci. Amer.* 192(6): 92-100.
- RIJSEWIJK, F., M. SCHUERMANN, E. WAGENAAR, P. PARREN, D. WEIGEL and R. NUSSE (1987). The *Drosophila* homolog of the mouse mammary oncogene *int-1* is identical to the segment polarity gene *wingless*. *Cell* 50: 649-657.
- RINI, J.M., U. SCHULZE-GAHMEN and I.A. WILSON (1992). Structural evidence for induced fit as a mechanism for antibody-antigen recognition. *Science* 255: 959-965.
- ROBBINS, J., S.M. DILWORTH, R.A. LASKEY and C. DINGWALL (1991). Two interdependent basic domains in nucleoplasmin nuclear targeting sequence: identification of a class of bipartite nuclear targeting sequence. *Cell* 64: 615-623.
- ROBINSON, D.G. and S. HILLMER (1990). Endocytosis in plants. *Physiol. Plant.* 79: 96-104.
- ROBSON, G.D., M.G. WIEBE and A.P.J. TRINCI (1991). Involvement of calcium in the regulation of hyphal extension and branching in *Fusarium graminearum* A 3/5. *Exp. Mycol.* 15:263-272.
- RODRIGUEZ, J.R. and B.M. PATERSON (1990). Yeast myosin heavy chain mutant: maintenance of the cell type specific budding pattern and the normal deposition of chitin and cell wall components requires an intact myosin heavy chain gene. *Cell Motil. Cytoskel.* 17: 301-308.
- ROONEY, T.A., E.J. SASS and A.P. THOMAS (1990). Agonist-induced cytosolic calcium oscillations originate from a specific locus in single hepatocytes. *J. Biol. Chem.* 265: 10792-10796.
- ROOTS, B.I (1983). Neurofilament accumulation induced in synapses by leupeptin. *Science* 221: 971-972.
- ROSS, G.G. (1984). Grand Unified Theories. Benjamin/Cummings, Reading, Mass. 497 pp.
- (1991). Evidence of supersymmetry. *Nature* 352: 21-22.
- ROTH, S., D. STEIN and C. NÜSSLEIN-VOLHARD (1989). A gradient of nuclear localization of the *dorsal* protein determines dorsoventral pattern in the *Drosophila* embryo. *Cell* 59: 1189-1202.
- ROTHMAN, J.E. and L. ORCI (1992). Molecular dissection of the secretory pathway. *Nature* 355: 409-415.
- RUNCORN, S.K. (1992). Polar path in geomagnetic reversals. *Nature* 356: 654-656.
- RUNGGER, D., L. MUSTER, R. BOECK and A. NICHOLS (1990). Tissue-specific trans-activation of the rabbit β -globin promoter in *Xenopus* oocytes. *Differentiation* 44: 8-17.
- RUGGIERI, R., A. BENDER, Y. MATSUI, S. POWERS, Y. TAKAI, J.R. PRINGLE and K. MATSUMOTO (1992). RSR1, a ras-like gene homologous to Krev-1 (smg21A/rap1A): role in the development of cell polarity and interactions with the ras pathway in *Saccharomyces cerevisiae*. *Mol. Cell. Biol.* 12: 758-766.
- SACHS, T. (1991a). Cell polarity and tissue patterning in plants. *Development (Suppl.)* 1: 83-93.
- (1991b). Pattern Formation in Plant Tissues. Cambridge University Press, New York. 234 pp.
- SALMON, E.D. (1989). Microtubules dynamics and chromosome movement. In *Mitosis*. Pp. 119-182. J.S. Hyams and B.R. Brinkley (eds). Academic Press, New York.
- SALSER, S.J. and C. KENYON (1992). Activation of a *C. elegans antennapedia* homologue in migrating cells controls their direction of migration. *Nature* 355: 255-258.
- SAMPATH, P. and T.D. POLLARD (1991). Effects of cytochalasin, phalloidin, and pH on the elongation of actin filaments. *Biochemistry* 30: 1973-1980.
- SAMPEDRO, J. and I. GUERRERO (1991). Unrestricted expression of the *Drosophila* gene *patched* allows a normal segment polarity. *Nature* 353: 187-190.
- SANCHEZ-BRAVO, J., A. ORTUÑO, J.M. BOTIA, M. ACOSTA and F. SABATER. (1991). Lateral diffusion of polarly transported indoleacetic acid and its role in the growth of *Lupinus albus* L. hypocotyls. *Planta* 185: 391-396.
- SANDERS, D. and C.L. SLAYMAN (1989). In *Plant Membrane Transport: The Current Position*. Pp. 3-11. J. Dainty, M.I. de Michaelis, E. Marre and F. Rasi-Caldogno (eds). Elsevier, Amsterdam.
- SAUTERER, R.A., R.J. EDDY, A.L. HALL and J.S. CONDEELIS (1991). Purification and characterization of agiactin, a newly identified agonist-regulated actin-capping protein from *Dictyostelium* amoebae. *J. Biol. Chem.* 266: 24533-24539.
- SCALLON, B.J., W.-J.C. FUNG, T.C. TSANG, S. LI, H. KADO-FONG, K.-S. HUANG and J.P. KOCHAN (1991). Primary structure and functional activity of a phosphatidylinositol-glycan-specific phospholipase D. *Science* 252: 446-448.

- SCHATTEN, H., M. WALTER, H. BIESSMANN and G. SCHÄTTEN (1988). Microtubules are required for centrosome expansion and positioning while microfilaments are required for centrosome separation in sea urchin eggs during fertilization and mitosis. *Cell Motil. Cytoskel.* 11:248-259.
- SCHLEIF, R. (1988). DNA binding by proteins. *Science* 241: 1182-1187.
- SCHROEDER, J.I. and P. THULEAU (1991). Ca²⁺ channels in higher plant cells. *Plant Cell* 3: 555-559.
- SCHULZE, E. and M. KIRSCHNER (1988). New features of microtubule behaviour observed *in vivo*. *Nature* 334: 356-359.
- SCHWAN, H.P. (1989). Dielectrophoresis and rotation of cells. In *Electroporation and Electrofusion in Cell Biology*. Pp. 3-21. E. Neumann, A.E. Sowers and C.A. Jordan (eds), Plenum Publ., New York. 436 pp.
- SCHWOB, E. and R.P. MARTIN (1992). New yeast actin-like gene required late in the cell cycle. *Nature* 355: 179-182.
- SCIORTINO, F., A. GEIGER and H.E. STANDLEY (1991). Effect of defects on molecular mobility in liquid water. *Nature* 354: 218-221.
- SHARP, K.A., B. HONIG and S.C. HARVEY (1990). Electrical potential of transfer RNAs: codon-anticodon recognition. *Biochemistry* 29: 340-346.
- SHARP, P.A. (1991). "Five easy pieces". *Science* 254: 663.
- SHECHTMAN, D., I. BLECH, D. GRATIAS and J.W. CAHN (1984). Metallic phase with long-range orientational order and no translational symmetry. *Phys. Rev. Lett.* 53: 1951-1953.
- SILVER, P.A. (1991). How proteins enter the nucleus. *Cell* 64: 489-497.
- SIMON, S.M. and G. BLOBEL (1991). A protein-conducting channel in the endoplasmic reticulum. *Cell* 65: 371-380.
- SIMONS, K. and A. WANDINGER-NESS (1990). Polarized sorting in epithelia. *Cells* 62: 207-210.
- SINGER, R.H. (1992). The cytoskeleton and mRNA localization. *Curr. Opin. Cell Biol.* 4: 15-19.
- SLACK, J. (1992). The turn of the screw. *Nature* 355: 217.
- SLAMA-SCHWOK, A., M. OTTOLENGHI and D. AVNIR (1992). Long-lived photoinduced charge separation in a redox system trapped in a sol-gel glass. *Nature* 355: 240-242.
- SMITH, W.C. and R.M. HARLAND (1991). Injected Xwnt-8 RNA acts early in *Xenopus* embryos to promote formation of a vegetal dorsalizing center. *Cell* 67: 753-765.
- SNYDER, J.A., L. ARMSTRONG, O.G. STONINGTON, T.P. SPURCK and J.D. PICKETT-HEAPS (1991a). UV-microbeam irradiations of the mitotic spindle: spindle forces and structural analysis of lesions. *Eur. J. Cell Biol.* 55: 122-132.
- SNYDER, M., S. GEHRUNG and B.D. PAGE (1991b). Studies concerning the temporal and genetic control of cell polarity in *Saccharomyces cerevisiae*. *J. Cell Biol.* 114: 515-532.
- SOKOL, S., J.L. CHRISTIAN, R.T. MOON and D.A. MELTON (1991). Injected Wnt RNA induces a complete body axis in *Xenopus* embryos. *Cell* 67: 741-752.
- SOLOMON, F. (1991). Analyses of the cytoskeleton in *Saccharomyces cerevisiae*. *Ann. Rev. Cell Biol.* 7: 633-662.
- SOWERS, A.E. and C.R. HACKENBROCK (1981). Rate of lateral diffusion of intramembrane particles: measurement by electrophoretic displacement and rerandomization. *Proc. Natl. Acad. Sci. U.S.A.* 78: 6246-6250.
- SPERGEL, D.N. and N.G. TUROK (1992). Textures and cosmic structure. *Sci. Amer.* 266(3): 36-43.
- SPUDICH, J.A. (1989). In pursuit of myosin function. *Cell Regul.* 1: 1-11.
- ST JOHNSTON, D. and C. NÜSSLEIN-VOLHARD (1992). The origin of pattern and polarity in the *Drosophila* embryo. *Cell* 68: 201-219.
- ST JOHNSTON, D., D. BEUCHLE and C. NÜSSLEIN-VOLHARD (1991). *Staufen*, a gene required to localize maternal RNAs in the *Drosophila* egg. *Cell* 66: 51-63.
- STANOJEVIC, D., S. SMALL and M. LEVINE (1991). Regulation of a segmentation stripe by overlapping activators and repressors in the *Drosophila* embryo. *Science* 254: 1385-1387.

- STEARNS, T., L. EVANS and M. KIRSCHNER (1991). γ -tubulin is a highly conserved component of the centrosome. *Cell* 65: 825-836.
- STEER, C.J. and J.A. HANOVER (eds) (1991). *Intracellular Trafficking of Proteins*. Cambridge Univ. Press. 745 pp.
- STEIN, D. and C. NÜSSLEIN-VOLHARD (1992). Multiple extracellular activities in *Drosophila* egg perivitelline fluid are required for establishment of embryonic dorsal-ventral polarity. *Cell* 68: 429-440.
- STEIN, D., S. ROTH, E. VOGELSANG and C. NÜSSLEIN-VOLHARD (1991). The polarity of the dorsoventral axis in the *Drosophila* embryo is defined by an extracellular signal. *Cell* 65: 725-735.
- STEUER, E.R., L. WORDEMAN, J. SCHROER and M.P. SHEETZ (1990). Localization of cytoplasmic dynein to mitotic spindles and kinetochores. *Nature* 345: 266-268.
- STOCUM, D.L. (1991). Limb regeneration: a call to arms (and legs). *Cell* 67: 5-8.
- STONE, R. (1991). A trap to snare a monopole. *Science* 253: 625.
- STUMPF, H. (1966). Über gefalleabhängige Bildungen des Insektensegmentes. *J. Insect Physiol.* 12: 601-617.
- SUCHETA, A., B.A.C. ACKRELL, B. COCHRAN and F.A. ARMSTRONG (1992). Diode-like behaviour of a mitochondrial electron-transport enzyme. *Nature* 356: 361-362.
- SUN, G.-H., Y. OHYA and Y. ANRAKU (1992). Yeast calmodulin localizes to sites of cell growth. *Protoplasma* 166: 110-113.
- SZE, S.M. (ed.) (1991). *Semiconductor Devices: Pioneering Papers*. World Scientific, Singapore. 1028 pp.
- TABIN, C.J. (1991). Retinoids, homeoboxes, and growth factors: toward molecular models for limb development. *Cell* 66: 199-217.
- TARAKANOVA, G.A., E.M. SEROVA and V.N. ZHOLKEVICH (1991). Study of electrical polarization in gigantic *Pilobolus* cells using extracellular microelectrode measurements. *Fiziol Rast. (Mosc.)* 38: 176-180.
- THERIOT, J.A. and T.J. MITCHISON (1991). Actin microfilament dynamics in locomoting cells. *Nature* 352: 126-131.
- THISSE, C., F. PERRIN-SCHMITT, C. STOETZEL and B. THISSE (1991). Sequence-specific transactivation of the *Drosophila* twist gene by the dorsal gene product. *Cell* 65: 1191-1201.
- TICKLE, C. (1991). Retinoic acid and chick limb bud development. *Development (Suppl.)* 1: 113-121.
- TICKLE, C., D. SUMMERBELL and L. WOLPERT (1975). Positional signalling and specification of digits in chick limb morphogenesis. *Nature* 254: 199-202.
- TICKLE, C., J. LEE and G. EICHELE (1985). A quantitative analysis of the effect of all-trans-retinoic acid on the pattern of chick wing development. *Dev. Biol.* 109: 82-95.
- TICKLE, C., B.M. ALBERTS, L. WOLPERT and J. LEE (1982). Local application of retinoic acid to the limb bud mimics the action of the polarizing region. *Nature* 296: 564-565.
- TURIAN, G., F. KAPPELI and R. PEDUZZI (1991). Apical acidification of the germ tubes of the aquatic fungus *Saprolegnia parasitica* correlated with the mycosis of acid-stressed fishes. *Bot. Helv.* 101: 267-271.
- TURIAN, G., I. SCHÖNENBERGER and B.N. NGUYEN THI (1992). Cytoskeletal involvement in the bipolar disjunction of *Allomyces* gametangia. *Biomed. Lett.* 47: 215-219.
- ULBRICHT, T.L.V. (1959). Asymmetry: the non-conservation of parity and optical activity. *Quart. Rev. Chem. Soc.* 13: 48-60.
- UYEDA, T.Q.P., H.M. WARRICK, S.J. KRON and J.A. SPUDICH (1991). Quantized velocities at low myosin densities in an *in vitro* motility assay. *Nature* 352: 307-311.
- VAESSIN, H., E. GRELL, E. WOLFF, E. BIER, L.Y. JAN and Y.N. JAN (1991). *Prospero* is expressed in neuronal precursors and encodes a nuclear protein that is involved in the control of axonal outgrowth in *Drosophila*. *Cell* 67: 941-953.
- VAN DER BLIEK, A.M. and E.M. MEYEROWITZ (1991). Dynamin-like protein encoded by the *Drosophila* *shibire* gene associated with vesicular traffic. *Nature* 351: 411-414.

- VAN DUJN, B. and M. WANG (1990). Chemoattractant-induced membrane hyperpolarization in *Dictyostelium discoideum*. A possible role for cyclic GMP. *FEBS Lett.* 275: 201-204.
- VAN DUJN, B. AND K. INOUE (1991). Regulation of movement speed by intracellular pH during *Dictyostelium discoideum* chemotaxis. *Proc. Natl. Acad. Sci. U.S.A.* 88: 4951-4955.
- VASILESCU, D., J. JAZ, L. PACKER and B. PULLMAN (eds) (1990). Water and Ions in Biomolecular Systems. Birkhäuser, Basel, Boston. 297 pp.
- VEIT, B., B. GREENE, B. LOWE, J. MATHERN, N. SIHNA, E. VOLLBRECHT, R. WALKO and S. HAKE (1991). Genetic approaches to fluorescence and leaf development in maize. *Development (Suppl.)* 1: 105-111.
- WALD, G. (1957). The origin of optical activity. *Ann. N.Y. Acad. Sci.* 69(2): 352-368.
- WALTERS, E.T., H. ALIZADEH and G.A. CASTRO (1991). Similar neuronal alterations induced by axonal injury and learning in *Aplysia*. *Science* 253: 797-799.
- WANG, C. and R. LEHMANN (1991). *Nanos* is the localized posterior determinant in *Drosophila*. *Cell* 66: 637-647.
- WATERS, M.G., I.C. GRIFF and J.E. ROTHMAN (1991). Proteins involved in vesicular transport and membrane fusion. *Curr. Opin. Cell Biol.* 3: 615-620.
- WATSON, J. (1970). Molecular Biology of the Gene. W.A. Benjamin, Inc., New York, 2nd ed. 662 pp.
- WEISS, M.S., U. ABELE, J. WECKESSER, W. WELTE, E. SCHILTZ and G.E. SCHULZ (1991). Molecular architecture and electrostatic properties of a bacterial porin. *Science* 254: 1627-1630.
- WELCH, W.J. (1991). The role of heat-shock proteins as molecular chaperones. *Curr. Opin. Cell Biol.* 3: 1033-1038.
- WESSELS, J.G.H., J.H. SIETSMA and S.M. SONNENBERG (1988). A steady-state model for apical wall growth in fungi. *Acta Bot. Neerl.* 37: 3-16.
- WHARTON, R.P. and G. STRUHL (1991). RNA regulatory elements mediate control of *Drosophila* body pattern by the posterior morphogens *nanos*. *Cell* 67: 955-967.
- WIBERG, K.B., C.M. HADAD, C.M. BRENNEMAN, K.E. LAIDIG, M.A. MURCKO and T.J. LEPAGE (1991). The response of electrons to structural changes. *Science* 252: 1266-1272.
- WICK, M.J., J.L. MADARA, B.N. FIELDS and S.J. NORMAK (1991). Molecular cross talk between epithelial cells and pathogenic microorganisms. *Cell* 67: 651-659.
- WICK, S.M. (1991). Spatial aspects of cytokinesis in plant cells. *Curr. Opin. Cell Biol.* 3: 253-260.
- WILKINSON, D. (1991). Our Universes. Columbia University Press. 213 pp.
- WILLIAMS, J. and B. HOGAN (1991). Cell differentiation. *Curr. Opin. Cell Biol.* 3: 925-927.
- WILSON, P.D., A.C. SHERWOOD, K. PALLA, J. DU, R. WATSON and J.T. NORMAN (1991). Reversed polarity of Na⁺-K⁺-ATPase: mislocation to apical plasma membranes in polycystic kidney disease epithelia. *Am. J. Physiol.* 260: F420-430.
- WINEY, M., L. GOETSCH, P. BAUM and B. BYERS (1991). MPS1 and MPS2: novel yeast genes defining distinct steps of spindle pole body duplication. *J. Cell Biol.* 114: 745-754.
- WITTEKINDT, E., I. LAMPRECHT and G. KRAEPELIN (1989). DC electric fields induce polarization effects in the dimorphic fungus *Mycotypha africana*. *Endocytobiosis Cell. Res.* 6: 41-56.
- WITTEKINDT, E., D. BROERS, G. KRAEPELIN and I. LAMPRECHT (1990). Influence of non-thermic AC magnetic fields on spore germination in a dimorphic fungus. *Radiat. Environ. Biophys.* 29: 143-152.
- WOODWARD, A.M. and D.B. KELL (1990). On the nonlinear dielectric properties of biological systems. *Saccharomyces cerevisiae*. *Bioelectrochem. Bioener.* 24: 83-100.
- WÖSTEN, H.A.B., S.M. MOUKHA, J.H. SIETSMA and J.G.H. WESSELS (1991). Localization of growth and secretion of proteins in *Aspergillus niger*. *J. Gen. Microbiol.* 137: 2017-2023.
- WU, C.I. (1991). DNA strand asymmetry. *Nature* 352: 114.
- YE, Q., G.L. HECK and J.A. DESIMONE (1991). The anion paradox in sodium taste reception: resolution by voltage-clamp studies. *Science* 254: 724-726.
- YOST, H.J. (1992). Regulation of vertebrate left-right asymmetries by extracellular matrix. *Nature* 357: 158-161.

- YUAN, S. and I.B. HEATH (1991). Chlorotetracycline staining patterns of growing hyphal tips of the Oomycete *Saprolegnia ferax*. *Exp. Mycol.* 15: 91-102.
- YUMURA, S. and T. KITANISHI-YUMURA (1990). Immunoelectron microscopic studies of the ultrastructure of myosin filaments in *Dictyostelium discoideum*. *Cell Struct. Funct.* 15: 343-354.
- ZHENG, Y., M.K. JUNG and B.R. OAKLEY (1991). γ -tubulin is present in *Drosophila melanogaster* and *Homo sapiens* and is associated with the centrosome. *Cell* 65: 817-823.
- ZHOU, X.-L., M.A. STUMPF, H.C. HOCH and C. KUNG (1991). A mechanosensitive channel in whole cells and in membrane patches of the fungus *Uromyces*. *Science* 253: 1415-1417.
- ZIMMERMANN, U. and J. VIENKEN (1982). Electric field-induced cell-to-cell fusion. *J. Membr. Biol.* 67: 165-182.

