

## Electrophoresis

### 1. REVIEWS AND BOOKS

- 1856 Berg, K. and Ljungberg, C.: (Electrophoresis in narrow capillaries). *Kem. Tidskr.*, 102 (1990) 63-69; *C.A.*, 113 (1990) 20244n - a review with 8 refs.
- 1857 Schumann, R.: (The evolution of the pulsed-field gel electrophoresis techniques). *LaborPraxis*, 14 (1990) 362-368; *C.A.*, 113 (1990) 35464h - a review with 14 refs.

See also 1859, 1882, 1883, 1886, 1976.

### 2. FUNDAMENTALS, THEORY AND GENERAL

#### 2a. General

- 1858 Issaq, H.J., Atamna, I.Z., Metral, C.J. and Muschik, G.M.: Factors that influence mobility, resolution, and selectivity in capillary zone electrophoresis. I. Sodium phosphate vs. potassium phosphate. *J. Lig. Chromatogr.*, 13 (1990) 1247-1259.
- 1859 Thormann, W. and Mosher, R.A.: Theory of electrophoretic transport and separations: the study of electrophoretic boundaries and fundamental separation principles by computer simulation. *Adv. Electrophor.*, 2 (1988) 45-108; *C.A.*, 113 (1990) 29639c - a review with 179 refs.

See also 1860, 1938, 1939.

#### 2b. Thermodynamics and theoretical relationships

- 1860 Stevens, F.J.: Fractionation of macromolecules in an alternating transverse electric field: simulation of the method. *J. Biochem. Biophys. Methods*, 20 (1990) 275-292; *C.A.*, 113 (1990) 37294b.
- 1861 Tietz, D.: Evaluation of mobility data obtained from gel electrophoresis: strategies in the computation of particle and gel properties on the basis of the extended Orston model). *Adv. Electrophor.*, 2 (1988) 109-169; *C.A.*, 112 (1990) 245393q.

#### 2d. Measurement of physico-chemical and related values

- 1862 Furusawa, K., Chen, Q. and Tobori, N.: A new reference sample for microelectrophoresis. *J. Colloid Interface Sci.*, 137 (1990) 456-461; *C.A.*, 113 (1990) 29865y.
- 1863 Kittaka, S., Yamanaka, S., Yznagawa, N. and Okabe, T.: The specific interaction of magnesium and alkaline earth metal ions with well-defined surfaces of chromium oxides ( $\alpha$ -HCrO<sub>2</sub> and Cr<sub>2</sub>O<sub>3</sub>). *Bull. Chem. Soc. Jpn.*, 63 (1990) 1381-1388; *C.A.*, 113 (1990) 29870w.

See also 1937, 2137, 2138.

## 3. GENERAL TECHNIQUES

## 3a. Apparatus and accessories

- 1864 Bushey, M. and Jorgenson, J.W.: Automated instrumentation for comprehensive two-dimensional high-performance liquid chromatography/capillary zone electrophoresis. *Anal. Chem.*, 62 (1990) 978-984.
- 1865 Chu, G., Vollrath, D. and Davis, R.: Electrophoresis using contour-clamped electric fields. *Eur. Pat. Appl.* EP 356,187 (Cl. G01N27/26), 28 Feb. 1990, US Appl. 235,296, 23 Aug. 1988; 24 p.; *C.A.*, 113 (1990) 37421r.
- 1866 Cohen, D., Dufau, F. and Hache, J.: Automated gel electrophoresis and membrane transfer apparatus for separating macromolecules or their fragments. *Eur. Pat. Appl.* EP 359,619 (Cl. G01N27/26), 21 Mar. 1990, FR Appl. 88/11,627, 06 Sep. 1988; 7 p.; *C.A.*, 113 (1990) 20545m.
- 1867 Dutertre, B.: Method and apparatus for multiple electrophoresis to ensure the controlled migration of macromolecules in rectangular layers of gel. *Eur. Pat. Appl.* EP 358,556 (Cl. B01D57/02), 14 Mar. 1990, FR Appl. 88/11,626, 06 Sep. 1988; 18 p.; *C.A.*, 113 (1990) 20543j.
- 1868 Finney, J.D. and Finney, M.J.: Constrained uniform field gel-electrophoresis apparatus. *Eur. Pat. Appl.* EP 361,046 (Cl. G01N27/26), 04 Apr. 1990, US Appl. 231,821, 12 Aug. 1988; 18 p.; *C.A.*, 113 (1990) 51878b.
- 1869 Kindlmann, P.J. and Valley, R.A., Jr.: High-voltage electrophoresis switch apparatus. *Eur. Pat. Appl.* EP 359,107 (Cl. G01N27/26), 21 Mar. 1990, US Appl. 244,692, 14 Sep. 1988; 9 p.; *C.A.*, 113 (1990) 17288z.
- 1870 Kindlmann, P.J.: Electrophoresis apparatus with greater flexibility in directional modulation of electric field. *U.S. US* 4,911,817 (Cl. 204-299R; B01D13/02), 27 Mar. 1990, Appl. 260,150, 20 Oct. 1988; 8 p.; *C.A.*, 113 (1990) 17286x.
- 1871 Schwartz, D.C.: Pulsed oriented electrophoresis for separating particles. *Eur. Pat. Appl.* EP 359,589 (Cl. G01N27/26), 21 Mar. 1990, US Appl. 244,897, 15 Sep. 1988; 28 p.; *C.A.*, 113 (1990) 17307e.
- 1872 Zare, R.N. and Huang, X.: Capillary device for electrophoresis or chromatographs. *Eur. Pat. Appl.* EP 356,160 (Cl. G01N27/403), 28 Feb. 1990, US Appl. 235,953, 24 Aug. 1988; 8 p.; *C.A.*, 112 (1990) 191164v.

See also 1882, 1886, 1889.

## 3b. Detection procedures and detectors

- 1873 Takahashi, S.: Fluorescent acrylamides for electrophoresis media. *Jpn. Kokai Tokkyo Koho JP* 02 03,448 (90 03,448) (Cl. G01N27/26), 09 Jan. 1990, Appl. 88/147,772, 15 Jun. 1988; 2 p.; *C.A.*, 112 (1990) 237197p.

## 3c. Electrophoresis in stabilized media

- 1874 Lux, J.A., Yin, H.-F. and Schomburg, G.: A simple method for the production of gel-filled capillaries for capillary gel electrophoresis. *J. High Resolut. Chromatogr.*, 13 (1990) 436-437.

See also 2127.

## 4. SPECIAL TECHNIQUES

## 4a. Combination of electrophoretic techniques with chromatography

See 1864, 1889, 2148.

## 4b. Preparative and continuous procedures

1875 Debets, A.J.J., Hupe, K.-P., Brinkman, U.A.T. and Kok, W.T.: A new valve for zone-electrophoretic sample treatment coupled on-line with high performance liquid chromatography. *Chromatographia*, 29 (1990) 217-222.

See also 1877, 2027.

## 4c. Isoelectric focusing

1876 Chiari, M., Righetti, P.G., Ferraboschi, P., Jain, T. and Shorr, R. : Synthesis of thiomorpholino buffers for isoelectric focusing in immobilized pH gradients. *Electrophoresis (Weinheim)*, 11 (1990) 617-620.

See also 1906, 1974, 1978, 2046, 2063, 2077.

## 4d. Isotachopheresis

1877 Hirokawa, T., Hu, J.-Y., Umeda, K., Kimura, G., Ikeda, H., Nishiyama, F. and Kiso, Y.: Preparative isotachopheretic analyser equipped with a dropwise fractionating device. *J. Chromatogr.*, 513 (1990) 297-310.

1878 Smolkova-Keulemansova, E.: Cyclodextrins in chromatography and isotachopheresis. In: Huber, O. and Szejtli, J. (Editors), *Proc. Int. Symp. Cyclodextrins 4th*, Kluwer, Dordrecht, 1988, pp. 451-463; *C.A.*, 112 (1990) 245435e.

See also 1859, 2134, 2140, 2149.

## 4e. Two dimensional electrophoresis

1879 Sinha, P.K., Koettgen, E., Stoeffler-Meilicke, M., Ginazza, E. and Righetti, P.G.: Two-dimensional maps in very acidic immobilized pH gradients. *J. Biochem. Biophys. Methods*, 20 (1990) 345-352; *C.A.*, 113 (1990) 37295c.

See also 1900, 1928, 1929, 1931, 1934, 1935, 1951, 1964, 1980, 1986, 2006, 2023, 2031, 2036.

## 4f. Affinity electrophoresis

See 1900.

## 4g. Other special techniques

1880 Datta, R. and Kotamarthi, V.R.: Electrokinetic dispersion in capillary electrophoresis. *AIChE J.*, 36 (1990) 916-926; *C.A.*, 113 (1990) 42935r.

1881 Hannig, K., Kowalski, M., Klöck, G., Zimmermann, U. and Mang, V.: Free-flow electrophoresis under microgravity: evidence for enhanced resolution of cell separation. *Electrophoresis (Weinheim)*, 11 (1990) 600-604.

1882 Herb, R.: (Capillary electrophoresis. Principles of instrumentation and separation. Part 2.). *GIT Fachz. Lab.*, 34 (1990) 426-434; *C.A.*, 113 (1990) 34162w - a review with 49 refs.

- 1883 Herb, R.: (Capillary electrophoresis. Part 1. Principles of instrumentation and separation). *GIT Fachz. Lab.*, 34 (1990) 299-304; *C.A.*, 113 (1990) 34156x - a review with many refs.
- 1884 Otsuka, K. and Terabe, S.: Enantiomeric resolution by micellar electrokinetic chromatography with chiral surfactants. *J. Chromatogr.*, 515 (1990) 221-226.
- 1885 Row, K.H. and Row, J.I.: Modification of the capillary zone electrophoretic retention behavior of deoxyribonucleotides by different mobile phases. *Sep. Sci. Technol.*, 25 (1990) 323-333; *C.A.*, 112 (1990) 191101x.
- 1886 Steuer, W. and Grant, I.: (Capillary electrophoresis). *Nachr. Chem., Tech. Lab.*, 38 (1990) M1-M12; *C.A.*, 113 (1990) 34161v - a review with 58 refs.
- 1887 Terabe, S. and Isemura, T.: Effect of polymer ion concentrations on migration velocities in ion-exchange electrokinetic chromatography. *J. Chromatogr.*, 515 (1990) 667-676.
- 1888 Tsuda, T. and Muramatsu, Y.: Electrochromatography with continuous sample introduction. *J. Chromatogr.*, 515 (1990) 645-652.
- 1889 Yamamoto, H., Manabe, T. and Okuyama, T.: Apparatus for coupled high-performance liquid chromatography and capillary electrophoresis in the analysis of complex protein mixtures. *J. Chromatogr.*, 515 (1990) 659-666.
- See also 1856, 1858, 1864, 1872, 1890, 1891, 1919, 1921, 1939, 1940, 2123, 2141, 2142, 2143.

## 7. PHENOLS

- 1890 Gaitonde, C.D. and Pathak, P.V.: Capillary zone electrophoretic separation of chlorophenols in industrial waste water with on-column electrochemical detection. *J. Chromatogr.*, 514 (1990) 389-393.

## 10. CARBOHYDRATES

### 10a. Mono and oligosaccharides. Structural studies

- 1891 Garner, T.W. and Yeung, E.S.: Indirect fluorescence detection of sugars separated by capillary zone electrophoresis with visible laser excitation. *J. Chromatogr.*, 515 (1990) 639-644.
- 1892 Hiraizumi, S., Takasaki, S., Shiroki, K., Kochibe, N. and Kobata, A.: Transfection with fragments of the adenovirus 12 gene induces tumorigenicity-associated alteration of N-linked sugar chains in rat cells. *Arch. Biochem. Biophys.*, 280 (1990) 9-19.
- 1893 Nashabeh, W. and El Rassi, Z.: Capillary zone electrophoresis of pyridylamino derivatives of maltooligosaccharides. *J. Chromatogr.*, 514 (1990) 57-64.
- 1894 Taverna, M., Baillet, A. and Baylocq-Ferrier, D.: Identification of monosaccharides by high-performance liquid chromatography using methanolysis and a light-scattering detector. *J. Chromatogr.*, 514 (1990) 70-79.

### 10b. Polysaccharides, mucopolysaccharides, lipopolysaccharides

- 1895 Fransson, L.-A., Havsmark, B. and Silverberg, I.: A method for the sequence analysis of dermatan sulphate. *Biochem. J.*, 269 (1990) 381-388.
- 1896 Jacques, L.B., Wice, S.M. and Hiebert, L.M.: Determination of absolute amounts of heparin and of dextran sulfate in plasma in microgram quantities. *J. Lab. Clin. Med.*, 115 (1990) 422-432; *C.A.*, 113 (1990) 34281j.

*10c. Glycoproteins and their components*

- 1897 Funderburgh, J.L. and Conrad, G.W.: Isoforms of corneal keratan sulfate proteoglycan. *J. Biol. Chem.*, 265 (1990) 8297-8303.
- 1898 McBain, J.A. and Mueller, G.C.: Isolation of proteoglycans using phenol extraction and isopycnic centrifugation in cesium trifluoroacetate. *Anal. Biochem.*, 188 (1990) 203-213.
- 1899 Sharma, A., Chemelli, R. and Allen, H.J.: Human splenic galactin: physico-chemical characterization. *Biochemistry*, 29 (1990) 5309-5314.
- 1900 Succari, M., Foglietti, M.-J. and Percheron, F.: Microheterogeneity of  $\alpha_1$ -acid glycoprotein: variation during the menstrual cycle in healthy women, and profile in women receiving estrogen-progestogen treatment. *Clin. Chim. Acta*, 187 (1990) 235-242.
- 1901 Zhang, Q., Domenicucci, C., Goldberg, H.A., Wrana, J.L. and Sodek, J.: Characterization of fetal porcine bone sialoproteins, secreted phosphoprotein I (SPPI, osteopontin), bone sialoprotein, and a 23-kDa glycoprotein. Demonstration that the 23-kDa glycoprotein is derived from the carboxyl terminus of SPPI. *J. Biol. Chem.*, 265 (1990) 7583-7589.

**11. ORGANIC ACIDS AND LIPIDS***11a. Organic acids and simple esters*

See 2141.

*11c. Lipids and their constituents*

- 1902 Stein, M.A., McAllister, S.A., Johnston, K.H. and Diedrich, D.L.: Detection of lipopolysaccharides blotted to polyvinylidene difluoride membranes. *Anal. Biochem.*, 188 (1990) 285-287.

*11d. Lipoproteins and their constituents*

- 1903 Azrolan, N. and Breslow, J.L.: A solution hybridization/RNase protection assay with riboprobes to determine absolute levels of apoB, A-I, and EmRNA in human hepatoma cell lines. *J. Lipid Res.*, 31 (1990) 1141-1146.
- 1904 Bruckert, E., Truffert, J., De Gennes, J.L., Lagarde, J.P., Bernard, C., Federspiel, M.C., Giral, P. and Dairou, F.: Does electrophoresis reliably screen for high serum lipoprotein Lp(a)? *Clin. Chim. Acta*, 188 (1990) 71-78.
- 1905 Dachet, C., Motta, C., Neufcourt, D. and Jacotot, B.: Fluidity changes and chemical composition of lipoproteins in type IIa hyperlipoproteinemia. *Biochim. Biophys. Acta*, 1046 (1990) 64-72.
- 1906 Isobe, H., Sakai, H., Satoh, M., Sakamoto, S., Koga, S. and Nawata, H.: Decreased proapolipoprotein A-I processing in liver disease: evidence for hepatic participation in proapolipoprotein A-I conversion. *Clin. Chim. Acta*, 189 (1990) 303-312.
- 1907 Kilsdonk, E.P.C., van Gent, T. and van Tol, A.: Characterization of human high-density lipoprotein subclasses LP A-I and LP A-I/A-II and binding to HepG2 cells. *Biochim. Biophys. Acta*, 1045 (1990) 205-212.
- 1908 Kostner, G.M., Gries, A., Pometta, M., Molinari, E., Fichler, P. and Aicher, H.: Immunochemical determination of lipoprotein Lp(a): comparison of Laurell electrophoresis and ELISA. *Clin. Chim. Acta*, 188 (1990) 187-192.

- 1909 Kushwaha, R.S., Rainwater, D.L., Williams, M.C., Getz, G.S. and McGill, H.C., Jr.: Impaired plasma cholesteryl ester transfer with accumulation of larger high density lipoproteins in some families of baboons (*Papio* sp.). *J. Lipid Res.*, 31 (1990) 965-973.
- 1910 Mortimer, B.-C., Simmonds, W.J., Cockman, S.J., Stick, R.V. and Redgrave, T.G.: The effect of monostearoylglycerol on the metabolism of chylomicron-like lipid emulsions injected intravenously in rats. *Biochim. Biophys. Acta*, 1046 (1990) 46-56.
- 1911 Park, J.R. and Cho, B.H.S.: Effects of estrogen on very-low-density lipoprotein triacylglycerol metabolism in chicks. *Biochim. Biophys. Acta*, 1045 (1990) 180-186.
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- 1913 Pouliot, M.-C., Despres, J.-P., Moorjani, S., Lupien, P.J., Tremblay, A. and Bouchard, C.: Apolipoprotein E polymorphism alters the association between body fatness and plasma lipoproteins in women. *J. Lipid Res.*, 31 (1990) 1023-1029.
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- 1916 Vadiveloo, P.K. and Fidge, N.H.: Studies on the interaction between apolipoprotein A-II-enriched HDL<sub>3</sub> and cultured bovine aortic endothelial (BAE) cells. *Biochim. Biophys. Acta*, 1045 (1990) 135-141.
- 1917 Williams, P.T., Krauss, R.H., Nichols, A.V., Vranizan, K.M. and Wood, P.D.S.: Identifying the predominant peak diameter of high-density and low-density lipoproteins by electrophoresis. *J. Lipid Res.*, 31 (1990) 1131-1139.

See also 2015.

### 13. STEROIDS

#### 13a. Pregnane and androstane derivatives

- 1918 Nishi, H., Fukuyama, T., Maatsuo, M. and Terabe, S.: Separation and determination of lipophilic corticosteroids and benzothiazepin analogues by micellar electrokinetic chromatography using bile salts. *J. Chromatogr.*, 513 (1990) 279-295.

### 15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS

#### 15a. Terpenes

See 2141.

## 18. AMINO ACIDS AND PEPTIDES; CHEMICAL STRUCTURE OF PROTEINS

## 18b. Peptides and peptidic and proteinous hormones

- 1919 Al-Ahdal, M.N., Quadri, S.M.H. and McGarry, T.J.: Gel filtration high performance liquid chromatography of envelope polypeptide variants of herpes simplex type 1 strains. *Biomed. Chromatogr.*, 4 (1990) 148-151.
- 1920 Bjartell, A., Ekman, R. and Loh, Y.P.: Biosynthesis and processing of delta sleep-inducing peptide-like precursors in primary cultures of mouse anterior pituitary cells. *Eur. J. Biochem.*, 190 (1990) 131-137.
- 1921 Camilleri, P., Haskins, N.J. and Hill, A.J.: Rapid analysis of a peptide by fast-atom bombardment mass spectrometry after polyacrylamide gel electrophoresis. *Rapid Commun. Mass Spectrom.*, 3 (1990) 346-347; *C.A.*, 113 (1990) 20449h.
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- 1923 Oswald, A., Streubel, M., Ljungberg, U., Hermans, J., Eskins, K. and Westhoff, P.: Differential biogenesis of photosystem-II in mesophyll and bundle-sheath cells of "malic" enzyme NADP<sup>+</sup>-type C<sub>4</sub> plants. A comparative protein and RNA analysis. *Eur. J. Biochem.*, 190 (1990) 185-194.
- 1924 Prigent, C., Aoufouchi, S. and Philippe, M.: Identification of DNA ligase I related polypeptides in three different human cells. *Biochem. Biophys. Res. Commun.*, 169 (1990) 888-895.
- 1925 Reuter, C., Findik, D. and Presek, P.: Characterization of purified pp60<sup>c-src</sup> protein tyrosine kinase from human platelets. *Eur. J. Biochem.*, 190 (1990) 343-350.
- 1926 Robba, A.L., Alvarez, M.E., Lawson, D. and Maccioni, H.J.F.: A polypeptide of 59 kDa is associated with bundles of cytoplasmic filaments in *Neurospora crassa*. *Biochem. J.*, 268 (1990) 649-655.
- 1927 Yu, K.-T., Benjamin, W.B., Ramakrishna, S., Khalaf, N. and Czech, M.P.: An insulin-sensitive cytosolic protein kinase accounts for the regulation of ATP citrate-lyase phosphorylation. *Biochem. J.*, 268 (1990) 539-545.

See also 1864, 1986, 2071.

## 18c. Elucidation of structure of proteins and enzymes

- 1928 Aebersold, R. and Leavitt, J.: Sequence analysis of proteins separated by polyacrylamide gel electrophoresis: Towards an integrated protein database. *Electrophoresis (Weinheim)*, 11 (1990) 517-527.
- 1929 Bauw, G., Rasmussen, H.H., van den Bulcke, M., van Damme, J., Puype, M., Gesser, B., Celis, J.E. and Vandekerckhove, J.: Two-dimensional gel electrophoresis, protein electroblotting and microsequencing: a direct link between proteins and genes. *Electrophoresis (Weinheim)*, 11 (1990) 528-536.
- 1930 Bergman, T. and Jörnvall, H.: Electroblotting of polypeptides onto glass fiber filters for direct sequence analysis after sodium dodecyl sulfate-polyacrylamide gel electrophoresis. *Electrophoresis (Weinheim)*, 11 (1990) 569-572.
- 1931 Choli, T. and Wittmann-Liebold, B.: Protein blotting followed by microsequencing. *Electrophoresis (Weinheim)*, 11 (1990) 562-568.
- 1932 Eckerskorn, C. and Lottspeich, F.: Combination of two-dimensional gel electrophoresis with microsequencing and amino acid composition analysis: improvement of speed and sensitivity in protein characterization. *Electrophoresis (Weinheim)*, 11 (1990) 554-561.

- 1933 Hirano, H. and Watanabe, T.: Microsequencing of proteins electrotransferred onto immobilizing matrices from polyacrylamide gel electrophoresis: application to an insoluble protein. *Electrophoresis (Weinheim)*, 11 (1990) 573-580.
- 1934 Jungblut, P., Eckerskorn, C., Lottspeich, F. and Klose, J.: Blotting efficiency investigated by using two-dimensional electrophoresis, hydrophobic membranes and proteins from different sources. *Electrophoresis (Weinheim)*, 11 (1990) 581-588.
- 1935 Tempst, P., Link, A.J., Riviere, L.R., Fleming, M. and Elicone, C.: Internal sequence analysis of proteins separated on polyacrylamide gels at the submicrogram level: improved methods, applications and gene cloning strategies. *Electrophoresis (Weinheim)*, 11 (1990) 537-553.
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See also 2093.

## 19. PROTEINS

### 19a. General techniques

- 1937 Freiburg, M. and Freiburg, M.: (Separation and determination of the relative molar masses of proteins by SDS-polyacrylamide gel electrophoresis. A secondary school education project). *Prax. Naturwiss., Chem.*, 39 (1990) 25-31; *C.A.*, 113 (1990) 39464f.
- 1938 Levine, M.L. and Bier, M.: Electrophoretic transport of solutes in aqueous two-phase systems. *Electrophoresis (Weinheim)*, 11 (1990) 605-611.
- 1939 Nath, S., Schütte, H., Hustedt, H. and Deckwer, W.-D.: Correlation of migration behavior in free-flow zone electrophoresis and electrophoretic titration curve. *Electrophoresis (Weinheim)*, 11 (1990) 612-616.
- 1940 Swedberg, S.A.: Halogenated surface with reduced protein interaction, method of producing it, and its use in electrophoretic protein separation. *PCT Int. Appl. WO 12,225 (Cl. G01N27/26)*, 14 Dec. 1989, Appl. 98/US1877, 02 Jun. 1988; 27 p.; *C.A.*, 113 (1990) 20541g.
- 1941 Takahashi, N. and Hirose, M.: Determination of sulfhydryl groups and disulfide bonds in a protein by polyacrylamide gel electrophoresis. *Anal. Biochem.*, 188 (1990) 359-365.

See also 1861, 1889.

### 19b. Proteins of cells, viruses and subcellular particles

- 1942 Acosta, O. and Mayo, M.: Unusual electrophoretic properties of the coat protein of raspberry ringspot nepovirus. *Intervirology*, 31 (1990) 31-37; *C.A.*, 113 (1990) 2816w.
- 1943 Arisaka, F., Takeda, S., Furue, K., Nishijima, N. and Ishii, S.: Structural studies of the contractile tail sheath protein of bacteriophage T4. 2. Structural analysis of the tail sheath protein, Gp18 by limited proteolysis, immunoblotting, and immunoelectron microscopy. *Biochemistry*, 29 (1990) 5057-5062.
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- 1945 Hardeman, D., Versantvoort, C., van den Brink, J.M. and van den Bosch, H.: Studies on peroxisomal membranes. *Biochim. Biophys. Acta*, 1027 (1990) 149-154.
- 1946 Iwaki, M., Kitagawa, T., Akamatsu, Y. and Aibara, K.: Cytotoxic effects of aflatoxin B<sub>1</sub> and its association with cellular components in chicken embryo primary cultured cells. *Biochim. Biophys. Acta*, 1035 (1990) 146-153.
- 1947 Johnston, P.A. and Südhof, T.C.: The multisubunit structure of synaptophysin. Relationship between disulfide bonding and homo-oligomerization. *J. Biol. Chem.*, 265 (1990) 8869-8873.
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- 1949 Kasahara, T., Ezaki, O. and Kasahara, M.: Different effects of two proteinase inhibitors on insulin-induced cellular responses in rat adipocytes. *Biochim. Biophys. Acta*, 1054 (1990) 89-94.
- 1950 Kohrle, J., Raemussen, U.B., Rokos, H., Leonard, J.L. and Hesch, R.D.: Selective affinity labeling of a 27-kDa integral membrane protein in rat liver and kidney with N-bromoacetyl derivatives of L-thyroxine and 3,5,3'-triiodo-L-thyronine. *J. Biol. Chem.*, 265 (1990) 6146-6154.
- 1951 Kyriakis, J.M. and Avruch, J.: Insulin, epidermal growth factor and fibroblast growth factor elicit distinct patterns of protein tyrosine phosphorylation in BC<sub>3</sub>H1 cells. *Biochim. Biophys. Acta*, 1054 (1990) 73-82.
- 1952 Law, R.H.P. and Nagley, P.: Import into mitochondria of precursors containing hydrophobic passenger proteins: pretreatment of precursors with urea inhibits import. *Biochim. Biophys. Acta*, 1027 (1990) 141-148.
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- 1958 Ramagopal, S.: Subcellular distribution of ribosomal proteins in *Dictyostelium discoideum*. *Biochem. Cell Biol.*, 68 (1990) 839-845.

See also 2006, 2022, 2109.

#### 19c. Proteins synthesized by genetic manipulation

- 1959 Pfaff, S.L., Tamkun, M.M. and Taylor, W.L.: pOEV: a *Xenopus* oocyte protein expression vector. *Anal. Biochem.*, 188 (1990) 192-199.

See also 2035, 2068, 2122.

*19d. Microbial and plant proteins*

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## 20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

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See 1918.

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See 1875.

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See 1896, 1900, 1904, 1906, 1908, 1913, 1915, 1917, 2042, 2063, 2112, 2128.

**34. FOOD ANALYSIS****34b. Complex mixtures (single compounds by cross-reference only)**

See 2000.

**35. ENVIRONMENTAL ANALYSIS****35b. Air pollution (complex mixtures; single compounds by cross-reference only)**

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