

Electrophoresis

1. REVIEWS AND BOOKS

- 1 Foley, J.P. and Ahuja, E.S.: Electrokinetic chromatography. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 81-178; C.A., 125 (1996) 215961z - a review with many refs.
- 2 Holtzhauer, M., et al.: (Electrophoretic techniques). In: Holtzhauer, M. (Editor), *Methoden Proteinanal.*, Springer, Berlin, 1996, pp. 356-378; C.A., 125 (1996) 215942u - a review with 7 refs.
- 3 Kasicka, V. (Editor): *Special Issue of the 13th Symposium on Biomedical Applications of Chromatography and Electrophoresis, held September 4-7, 1995, Prague, Czech Republic*. In: *J. Chromatogr. B*, Vol. 681, No. 1, Elsevier, Amsterdam, 1996, 211 pp.; C.A., 125 (1996) 81226c.
- 4 Lunte, S.M. and Radzik, D.M. (Editors): *Pharmaceutical and Biomedical Applications of Capillary Electrophoresis*. In: *Prog. Pharm. Biomed. Anal.*, Vol. 2, Pergamon, Oxford, 1996, 511 pp.; C.A., 125 (1996) 189940v.
- 5 Vojtiskova, M.: Electrophoresis. *Bioelectrochem.: Princ. Pract.*, 3(Experimental Techniques in Bioelectrochemistry) (1996) 489-526; C.A., 125 (1996) 269448f - a review with 136 refs.

See also 10, 38, 77, 78, 82, 103, 107, 108, 109, 114, 123, 132, 138, 144, 148, 177, 178, 203, 219, 287, 299, 311, 323, 336, 340, 345, 349, 353, 362, 383, 403, 436, 451, 454, 485, 490, 530, 544, 551, 552, 560, 561, 562, 586, 596, 601, 604, 612, 617, 647, 713, 715, 726, 747, 749, 763, 769, 777, 784, 817, 818, 850, 854, 862, 865, 892, 895, 898, 905, 921.

2. FUNDAMENTALS, THEORY AND GENERAL

2a. General

- 6 Day, I.N.M., Bolla, M., Haddad, L., O'Dell, S. and Humphries, S.E.: Microtiter array diagonal gel electrophoresis (MADGE) for population scale genotype analyses. In: Elles, R. (Editor), *Mol. Diagn. Genet. Dis.*, Humana, Totowa, 1996, pp. 269-281; C.A., 125 (1996) 269465j.
- 7 Kobayashi, H.: (Electrophoresis under microgravity). *Kuromatogurafi*, 17 (1996) 132-135; C.A., 125 (1996) 81075c.
- 8 Mesaros, J.M., Gavin, P.F. and Ewing, A.G.: Flow injection analysis using continuous channel electrophoresis. *Anal. Chem.*, 68 (1996) 3441-3449.
- 9 Timperman, A., Tracht, S.E. and Sweedler, J.V.: Dynamic on-column pH monitoring in capillary electrophoresis: application to volume-limited outlet vials. *Anal. Chem.*, 68 (1996) 2693-2698.

- 10 Tomlinson, A.J., Benson, L.M., Guzman, N.A. and Naylor, S.: Preconcentration and microreaction technology on-line with capillary electrophoresis. *J. Chromatogr. A*, 744 (1996) 3-15 - a review with 57 refs.
- 11 Tran, H.M., Smith, D.M. and Epstein, L.B.: Method and apparatus for extracting solutes from electrophoresis gel plugs. *U.S. US 5,527,680* (Cl. 204-466; C12Q1/100), 18 Jun. 1996, Appl. 404,687, 15 Mar. 1995; 9 pp.; C.A., 125 (1996) 109624g.
- 12 Xu, X., Kok, W.T. and Poppe, H.: Change of pH in electrophoretic zones as a cause of peak deformation. *J. Chromatogr. A*, 742 (1996) 211-227.
- 13 Zhang, C.-X. and Thormann, W.: Head-column field-amplified sample stacking in binary system capillary electrophoresis: a robust approach providing over 1000-fold sensitivity enhancement. *Anal. Chem.*, 68 (1996) 2523-2532.
- 14 Zhou, J., Wang, X., Zhang, Y. and Zhou, J.: (Key technique in urea-gradient electrophoresis). *Shengwu Huaxue Yu Shengwu Wuli Jinzhan*, 23 (1996) 172-175; C.A., 125 (1996) 216159f.

See also 15, 31, 76, 91, 100, 105, 115, 158, 193, 681, 753.

2b. Thermodynamics and theoretical relationships

- 15 Dolnik, V.: Selectivity, differential mobility and resolution as parameters to optimize capillary electrophoretic separation. *J. Chromatogr. A*, 744 (1996) 115-121.
- 16 Donath, E., Krabi, A., Allan, G. and Vincent, B.: A study of polymer depletion layers by electrophoresis: the influence of viscosity profiles and the nonlinearity of the Poisson-Boltzmann equation. *Langmuir*, 12 (1996) 3425-3430; C.A., 125 (1996) 52790b.
- 17 Nixon, G.I. and Slater, G.W.: Entropic trapping and electrophoretic drift of a polyelectrolyte down a channel with a periodically oscillating width. *Phys. Rev. E: Stat. Phys., Plasmas, Fluids, Relat. Interdiscip. Top.*; 53 (1996) 4969-4980; C.A., 125 (1996) 52794f.
- 18 Ohshima, H.: Henry's function for electrophoresis of a cylindrical colloidal particle. *J. Colloid Interface Sci.*, 180 (1996) 299-301; C.A., 125 (1996) 96896v.
- 19 Rathore, A.S. and Horváth, C.: Separation parameters via virtual migration distances in high-performance liquid chromatography, capillary zone electrophoresis and electrokinetic chromatography. *J. Chromatogr. A*, 743 (1996) 231-246.
- 20 Sidorovo, M.P., Ermakova, L.E. and Kavokina, I.A.: (Adsorption and electrokinetic characteristics of boehmite in NaCl and BaCl₂ solutions). In: Tikhonov, A.N. (Editor), *Khimiya, Izdatel'stvo Moskovskogo Universiteta*, Moscow, 1994, pp. 71-77; C.A., 125 (1996) 42566u.
- 21 Slater, G.W. and Viovy, J.-L. (Editors): *Paper Symposium: Theory of Electrophoresis*. In: *Electrophoresis*, Vol. 17, No. 6, VCH, Weinheim, 1996, 210 pp.; C.A., 125 (1996) 189939b.

See also 73, 90, 124, 137, 747, 761, 824, 853.

2c. Relationship between structure and electrophoretic behaviour

- 22 Micinski, S., Gronvalad, M. and Compton, B.J.: Structure-mobility relationships in free solution zone electrophoresis. *Methods Enzymol.*, 270(High Resolution Separation and Analysis of Biological Macromolecules, Pt. A) (1996) 342-358; C.A., 125 (1996) 216148b.

2d. Measurement of physico-chemical and related values

- 23 Dulsat, J.F., Amat, G. and Claramunt, J.: Separation of 1-(4-tert.-butylphenyl)-4-(4-hydroxypiperidinyl)-butan-1-one and its O-alkylated isomer by capillary zone electrophoresis. *J. Chromatogr. A*, 742 (1996) 275-280.
- 24 Gluck, S.J., Benkő, M.H., Hallberg, R.K. and Steele, K.P.: Indirect determination of octanol-water partition coefficients by micro-emulsion electrokinetic chromatography. *J. Chromatogr. A*, 744 (1996) 141-146.
- 25 Horsloef-Bjoerling, A., Sundeloef, L.-O., Porch, B., Valtcheva, L. and Hjerten, S.: Interaction between an anionic polysaccharide and an oppositely charged surfactant. Quasi elastic light scattering, size exclusion chromatography, and capillary electrophoresis study of the sodium hyaluronate (tetradecyltrimethylammonium bromide/sodium chloride/water system). *Langmuir*, 12 (1996) 4628-4637; C.A., 125 (1996) 178066p.
- 26 Seebacher, T. and Bade, E.G.: Quick and easy molecular weight determination with Macintosh computers and public domain image analysis software. *Electrophoresis (Weinheim)*, 17 (1996) 1573-1574.

See also 145, 174.

3. GENERAL TECHNIQUES

3a. Apparatus and accessories

- 27 Anazawa, T., Takahashi, S. and Kambara, H.: A capillary array gel electrophoresis system using multiple laser focussing for DNA sequencing. *Anal. Chem.*, 68 (1996) 2699-2704.
- 28 Andersson, B.-G.: Arrangement in a gel electrophoresis apparatus. *PCT Int. Appl. WO 96 18,099* (Cl. GO1N27/447), 13 Jun. 1996, SE Appl. 94/4,274, 8 Dec. 1994; 10 pp.; C.A., 125 (1996) 109634k.
- 29 Bier, M., Long, T.D., Marquee, R. and Ford, A.R.: Multichannel separation device. *U.S. US 5,540,826* (Cl. 204-610; B01D61/42), 30 Jul. 1996, Appl. 403,982, 15 Mar. 1995; 12 p.; C.A., 125 (1996) 171707q.
- 30 Brumley, R.L. and Luckey, J.A.: Electrophoresis analyzer. *U.S. US 5,538,613* (Cl. 204-612; GO1N27/26), 23 Jul. 1996, US Appl. 143,480, 26 Oct. 1993; 15 pp.; C.A., 125 (1996) 162728v.
- 31 Carlson, A., Coraor, L.D., Deno, N.S., Pauley, W.R., Spigelmyer, B., Mensch, F., Kristofik, R. and Harned, A.J.: Free flow electrophoresis device for biomolecule purification and separation in zero and one gravity. *U.S. US 5,562,812* (Cl. 204-600; B01D61/42), 8 Oct. 1996, Appl. 415,873, 3 Apr. 1995; 16 pp.; C.A., 125 (1996) 269838h.

- 32 Evans, R., Shon, M.F., Weeler, V. and Neckelmann, N.: Assembly method of and glass plate cassette for electrophoresis. *U.S. US 5,525,202* (Cl. 204-606; GO1N27/26), 11 Jun. 1996, Appl. 309,014, 20 Sep. 1994; 9 p.; C.A., 125 (1996) 103890u.
- 33 Hirota, N.: Apparatus for preparing support for electrophoretic system. *Jpn. Kokai Tokkyo Koho JP 08,166,370* [96,166,370] (Cl. GO1N27/447), 25 Jun. 1996, Appl. 94/308,761, 13 Dec. 1994; 4 p.; C.A., 125 (1996) 178482w.
- 34 Kanbara, H., Takahashi, S., Anazawa, T. and Yamada, H.: (Electrophoresis apparatus and method of loading sample). *Jpn. Kokai Tokkyo Koho JP 08,136,502* [96,136,502] (Cl. GO1N27/447), 31 May 1996, Appl. 94/277,777, 11 Nov. 1994; 7 pp.; C.A., 125 (1996) 160341q.
- 35 Liu, Z., Yang, H., Huang, Z., Wang, J., Ding, F. and Yuan, N.: Multichannel flow electrophoresis in an alternating electric field. *Sep. Sci. Technol.*, 31 (1996) 2257-2271; C.A., 125 (1996) 269661v.
- 36 Lugojan, P.P.: Gel electrophoresis cassette. *U.S. US 5,543,023* (Cl. 204-618; GO1N27/26), 6 Aug. 1996, Appl. 539,235, 4 Oct. 1995; 5 pp.; C.A., 125 (1996) 162736w.
- 37 Nakajima, K., Sano, K., Ooshima, T. and Sakamaki, T.: Apparatus for determining electrophoretic image density. *Jpn. Kokai Tokkyo Koho JP 08,122,248* [96,122,248] (Cl. GO1N21/27), 17 May 1996, Appl. 94/295,487, 24 Oct. 1994; 5 p.; C.A., 125 (1996) 96951j.
- 38 Nakamoto, Y.: (Utilization of capillary electrophoresis apparatus. Analysis of corrosion-inducing substances). *Idemitsu Giho*, 39 (1996) 285-290; C.A., 125 (1996) 184428z - a review with 10 refs.
- 39 Rice, S., Browning, C., Burke, J. and Nguyen, L.: Membrane loader for gel electrophoresis. *PCT Int. Appl. WO 96 27,787* (Cl. GO1N27/26), 12 Sep. 1996, US Appl. 397,898, 3 Mar. 1995; 35 pp.; C.A., 125 (1996) 242370n.
- 40 Tuurenhout, M.W.F., Venema, P. and de Vos, G.J.: Gel cassette and electrophoresis device. *PCT Int. Appl. WO 96 10,743* (Cl. GO1N27/447), 11 Apr. 1996, NL Appl. 94/1,611, 30 Sep. 1994; 35 pp.; C.A., 125 (1996) 29581a.
- 41 Waterhouse, P., Renfrew, J.A. and Stevens, J.K.: Automated electrophoresis and fluorescence detection apparatus and method. *PCT Int. Appl. WO 96 18,892* (Cl. GO1N27/447), 20 Jun. 1996, US Appl. 353,932, 12 Dec. 1994; 43 p.; C.A., 125 (1996) 103896a.
- 42 Zeppa, P.: Device for processing electrophoretic agarose supports. *Eur. Pat. Appl. EP 711,998* (Cl. GO1N27/447), 15 May 1996, IT Appl. 94/MI2,297, 14 Nov. 1994; 13 pp.; C.A., 125 (1996) 29571x.

See also 6, 89, 92, 94, 96, 111, 127, 133, 281, 358.

3b. Detectors and detection procedures

- 43 Hamby, R.K.: A sensitive fluorescent gel stain. *Am. Biotechnol. Lab.*, 14 (1996) 12; C.A., 125 (1996) 216124r.
- 44 Herolab GmbH Laborgeraete: (Apparatus for conversion of UV radiation into visible light as an analytical aid). *Ger. Offen. DE 19,510,999* (Cl. GO1N21/01), 26 Sep. 1996, Appl. 19,510,999, 25 Mar. 1995; 4 pp.; C.A., 125 (1996) 269826c.

- 45 Kawazumi, H., Song, J.M., Inoue, T. and Ogawa, T.: Application of an avalanche photodiode in a near-Geiger operation as a fluorescence detector for capillary electrophoresis. *J. Chromatogr. A*, 744 (1996) 31-36.
- 46 Lee, T.T. and Yeung, E.S.: Capillary electrophoresis detectors: lasers. *Methods Enzymol.*, 270(High Resolution Separation and Analysis of Biological Macromolecules, Pt. A) (1996) 419-449; C.A., 125 (1996) 162400g.
- 47 Li, L.-C. and McGown, L.B.: On-the-fly frequency-domain fluorescence lifetime detection in capillary electrophoresis. *Anal. Chem.*, 68 (1996) 2737-2743.
- 48 Lloyd, D.K.: Sample preparation for capillary electrophoresis. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 309-326; C.A., 125 (1996) 215964c.
- 49 Lloyd, M.D.: Fast staining and destaining of sodium dodecyl sulfate-polyacrylamide gels. *Anal. Biochem.*, 241 (1996) 139-140.
- 50 Matysik, F.-M.: Improved end-column amperometric detection for capillary electrophoresis. *J. Chromatogr. A*, 742 (1996) 229-234.
- 51 Matysik, F.-M. and Backofen, U.: Capillary electrophoresis and capillary flow injection with electrochemical detection. *Fresenius J. Anal. Chem.*, 356 (1996) 169-172.
- 52 Murray, A.J., Stegemann, J. and Ansorge, W.: Analysis of biological molecules tagged with a photosensitive label. *PCT Int. Appl. WO 96 23,213* (Cl. G01N27/26), 1 Aug. 1996, US Appl. 376,853, 23 Jan. 1995; 45 pp.; C.A., 125 (1996) 189962d.
- 53 O'Shea, T.J.: Electrochemical detection for capillary electrophoresis. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 277-306; C.A., 125 (1996) 215963b - a review with refs.
- 54 Petersen, J.R., Bissell, M.G. and Mohammad, A.A.: Laser induced resonance energy transfer - a novel approach towards achieving high sensitivity in capillary electrophoresis. I. Clinical diagnostic application. *J. Chromatogr. A*, 744 (1996) 37-44.
- 55 Plekhanov, A.Y.: Immunoreplica from the gel surface: rapid and sensitive blot plus intact gel. *Anal. Biochem.*, 239 (1996) 110-111.
- 56 Suck, R.W.L. and Krupinska, K.: Repeated probing of Western blots obtained from Coomassie Brilliant Blue-stained or unstained polyacrylamide gels. *BioTechniques*, 21 (1996) 418-422; C.A., 125 (1996) 242181b.
- 57 Szostek, B. and Koropchak, J.A.: Condensation nucleation light scattering detection for capillary electrophoresis. *Anal. Chem.*, 68 (1996) 2744-2752.
- 58 Waldron, K.C. and Li, J.: Investigation of a pulsed-laser thermo-optical absorbance detector for the determination of food preservatives separated by capillary electrophoresis. *J. Chromatogr. B*, 683 (1996) 47-54.
- 59 Zhong, M. and Lunte, S.M.: Integrated on-capillary electrochemical detector for capillary electrophoresis. *Anal. Chem.*, 68 (1996) 2488-2493.

See also 27, 41, 108, 114, 117, 123, 150, 155, 329, 355, 356, 364, 518, 644, 681, 709, 712, 734, 751, 836.

3c. Stabilization media for electrophoresis

- 60 Alpenfels, W.F., Engelhorn, S. and Manis, D.: Plastic mold for electrophoresis gel. *PCT Int. Appl. WO 96 09,537* (Cl. G01N27/447), 28 Mar. 1996, US Appl. 308,837, 19 Sep. 1994; 26 pp.; C.A., 125 (1996) 29575b.
- 61 Barberi, R., Bonvent, J.J., Bartolino, R., Roeraade, J., Capelli, L. and Righetti, P.G.: Probing soft polymeric coatings of a capillary by atomic force microscopy. *J. Chromatogr. B*, 683 (1996) 3-13.
- 62 Fujimoto, C., Fujise, Y. and Matsuzawa, E.: Fritless packed columns for capillary electrochromatography: separation of uncharged compounds on hydrophobic hydrogels. *Anal. Chem.*, 68 (1996) 2753-2757.
- 63 Guo, Y., Imahori, G.A. and Colón, L.A.: Hydrolytically stable amino-silica glass coating material for manipulation of the electroosmotic flow in capillary electrophoresis. *J. Chromatogr. A*, 744 (1996) 17-29.
- 64 Holzwarth, G.: Channel thickness variations could degrade resolution in electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1587-1589.
- 65 Kaltenbach, P., Swedberg, S., Sally, A., Witt, K.E., Bek, F. and Mittelstadt, L.S.: Miniaturized planar columns for use in a liquid phase separation apparatus. *PCT Int. Appl. WO 96 12,546* (Cl. B01D/08), 2 May 1996, US Appl. 326,111, 19 Oct. 1994; 72 p.; C.A., 125 (1996) 37247m.
- 66 Liao, J.-L., Chen, N., Ericson, C. and Hjerten, S.: Preparation of continuous beds derivatized with one-step alkyl and sulfonate groups for capillary electrochromatography. *Anal. Chem.*, 68 (1996) 3468-3472.

See also 113, 142, 745, 770, 773.

3e. Preparative scale electrophoresis

- 67 Yin, H., Keely-Templin, C. and McManigill, D.: Preparative capillary electrophoresis with wide-bore capillaries. *J. Chromatogr. A*, 744 (1996) 45-54.

See also 84, 179, 184, 344, 365, 551, 681, 723.

3f. Programmed voltage and buffer gradients

- 68 Bjellqvist, B.: New buffer system for electrophoresis and use thereof. *PCT Int. Appl. WO 96 16,724* (Cl. B01D57/02), 6 Jun. 1996, SE Appl. 94/4,141, 30 Nov. 1994; 23 pp.; C.A., 125 (1996) 109662t.
- 69 Domingo, G.A.: (Electrophoresis with temporally programmed temperature changes). *Span. ES 2,080,690* (Cl. C25B15/02), 1 Feb. 1996, Appl. 9,400,891, 27 Apr. 1994; 7 pp.; C.A., 125 (1996) 216370t.
- 70 Yan, C., Dadoo, R., Zare, R.N., Rakestraw, D.J. and Anex, D.S.: Gradient elution in capillary electrochromatography. *Anal. Chem.*, 68 (1996) 2726-2730.

4. SPECIAL TECHNIQUES

4a. Automation

See 41, 281, 859.

4b. Computerization and modelling

See 87, 155, 363, 375, 405, 444, 457, 853, 857.

4c. Combination with other physicochemical techniques, (MS, IR etc.)

- 71 Aebi, B. and Henion, J.D.: The reduction of chemical noise in an atmospheric pressure ionization/ion spray interface for mass spectrometry. *Rapid Commun. Mass Spectrom.*, 10 (1996) 947-951; *C.A.*, 125 (1996) 103828e.
- 72 Dunayevskiy, Y.M., Vouros, P., Wintner, E.A., Shipps, G.W., Carell, T. and Rebek, J., Jr.: Application of capillary electrophoresis-electrospray ionization mass spectrometry in the determination of molecular diversity. *Proc. Natl. Acad. Sci. U.S.A.*, 93 (1996) 6152-6157; *C.A.*, 125 (1996) 81189t.
- 73 Kinzler, J.A., Olesik, J.W. and Olesik, S.V.: Effect of laminar flow in capillary electrophoresis: model and experimental results on controlling analysis time and resolution with inductively coupled plasma mass spectrometry detection. *Anal. Chem.*, 68 (1996) 3250-3257.
- 74 Link, A.J., Eng, J. and Yates, J.R., III: Analyzing complex biological systems using micro-LC-ESI-MS-MS. *Am. Lab. (Shelton)*, 28 (1996) 27-30; *C.A.*, 125 (1996) 216241b.
- 75 Loo, R.R.O., Mitchell, C., Stevenson, T., Loo, J.A. and Andrews, P.C.: Interfacing polyacrylamide gel electrophoresis with mass spectrometry. In: Marshak, D.R. (Editor), *Tech. Protein Chem. VII, [Symp. Protein Soc.] 9th 1995*, Academic, San Diego, 1996, pp. 305-313; *C.A.*, 125 (1996) 269749e.
- 76 Rundlett, K.L. and Armstrong, D.W.: Mechanism of signal suppression by anionic surfactants in capillary electrophoresis - electrospray ionization mass spectrometry. *Anal. Chem.*, 68 (1996) 3493-3497.
- 77 Smith, R.D. and Udseth, H.R.: Capillary electrophoresis/mass spectrometry. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 229-275; *C.A.*, 125 (1996) 215962a - a review with many refs.
- 78 Smith, R.D., Udseth, H.R., Wahl, J.H., Goodlett, D.R. and Hofstadler, S.A.: Capillary electrophoresis-mass spectrometry. *Methods Enzymol.*, 271(High Resolution Separation and Analysis of Biological Macromolecules) (1996) 448-486; *C.A.*, 125 (1996) 215973e - a review with 90 refs.
- 79 Valaskovic, G.A. and McLafferty, F.W.: Sampling error in small-bore sheathless capillary electrophoresis/electrospray-ionization mass spectrometry. *Rapid Commun. Mass Spectrom.*, 10 (1996) 825-828; *C.A.*, 125 (1996) 74823s.
- 80 Zhang, H. and Caprioli, R.M.: Capillary electrophoresis combined with matrix-assisted laser desorption/ionization mass spectrometry: continuous sample deposition on a matrix-precoated membrane target. *J. Mass Spectrom.*, 31 (1996) 1039-1046; *C.A.*, 125 (1996) 269668c.

See also 81, 94, 107, 119, 134, 135, 152, 194, 222, 244, 257, 297, 308, 320, 326, 361, 373, 467, 477, 834, 847, 856, 887, 913.

4d. Affinity electrophoresis

- 81 Chu, Y.-H., Dunayevskiy, Y.M., Kirby, D.P., Vouros, P. and Karger, B.L.: Affinity capillary electrophoresis-mass spectrometry for screening combinatorial libraries. *J. Am. Chem. Soc.*, 118 (1996) 7827-7835; *C.A.*, 125 (1996) 131528a.
- 82 Nakamura, K.: (Affinity electrophoresis. Its application for studies on heterogeneity and functions of biomolecules). *Seikagaku*, No. 4 (1996) 265-281; *C.A.*, 125 (1996) 25275k - a review with 57 refs.
- 83 Nakata, N. and Tozawa, T.: (Lectin affinity electrophoretic patterns of serum AFP and amniotic fluid AFP in the woman during pregnancy). *Seibutsu Butsuri Kagaku*, 40 (1996) 211-214; *C.A.*, 125 (1996) 217871u.

See also 227, 443.

4e. Capillary zone electrophoresis and electrokinetic chromatography

- 84 Altria, K.D.: Micro-preparative applications of capillary electrophoresis. *Isol. Purif.*, 2 (1996) 113-125; *C.A.*, 125 (1996) 136663a.
- 85 Altria, K.D., Kelly, M.A. and Clark, B.J.: The use of a short-end injection procedure to achieve improved performance in capillary electrophoresis. *Chromatographia*, 43 (1996) 153-158.
- 86 Bayer, E., Behnke, B., Braun, E. and Grom, E.: Gradient-injection module for capillary-HPLC, capillary electrophoresis and electrochromatography. *Ger. Offen.* DE 4,447,333 (Cl. G01N27/447), 4 Jul. 1996, Appl. 4,447,333, 31 Dec. 1994; 9 p.; *C.A.*, 125 (1996) 103894y.
- 87 Beckers, J.L.: Calculation of the composition of sample zones in capillary zone electrophoresis. III. Weak bases and the application of background electrolytes with two co-ions. *J. Chromatogr. A*, 741 (1996) 265-277.
- 88 Bello, M.S.: Electrolytic modification of a buffer during a capillary electrophoresis run. *J. Chromatogr. A*, 744 (1996) 81-91.
- 89 Briggs, J., McCormick, R.M. and Hoyt, D.W.: Capillary electrophoresis apparatus and method. *U.S. Pat.* 5,560,811 (Cl. 204-451; B01D57/02), 1 Oct. 1996, Appl. 408,683, 21 Mar. 1995; 27 pp.; *C.A.*, 125 (1996) 269825b.
- 90 Bütchorn, U. and Pyell, U.: Band broadening arising from stepwise alterations in mobile phase composition in micellar electrokinetic chromatography. *Chromatographia*, 43 (1996) 237-241.
- 91 Capelli, L., Ermakov, S.V. and Righetti, P.G.: 'Tunable' positive and negative surface charges on a capillary wall: exploiting the immobililine chemistry. *J. Biochem. Biophys. Methods*, 32 (1996) 109-124; *C.A.*, 125 (1996) 52799m.
- 92 Chiari, M., Dell'Orto, N. and Gelain, A.: Synthesis and characterization of capillary columns coated with glycoside-bearing polymer. *Anal. Chem.*, 68 (1996) 2731-2736.
- 93 Colyer, C.L.: Baseline shifts, spontaneous peaks and emersion peaks in capillary electrophoresis. Avail. *Univ. Microfilms Int.*, Order No. DANNO4804, 1995, 102 p.; *C.A.*, 125 (1996) 103823z.

- 94 D'Silva, A.: Capillary zone electrophoresis-mass spectrometer interface. *U.S. US 5,543,618* (Cl. 250-288; B01D59/44), 6 Aug. 1996, Appl. 268,501, 30 Jun. 1994; 6 p.; *C.A.*, 125 (1996) 184390f.
- 95 Dittmann, M.M. and Rozing, G.P.: Capillary electrochromatography - a high-efficiency micro-separation technique. *J. Chromatogr. A*, 744 (1996) 63-74.
- 96 Domongo Galan, A.: (Thermostatic device for capillary electrophoresis supports which is capable of generating temperature gradients that are stable or variable over time). *Span. ES 2,078,878* (Cl. C12Q1/68), 16 Dec. 1995, Appl. 9,400,890, 27 Apr. 1994; 6 pp.; *C.A.*, 125 (1996) 216342k.
- 97 Ermakov, S.V., Capelli, L. and Righetti, P.G.: Method for measuring very weak, residual electroosmotic flow in coated capillaries. *J. Chromatogr. A*, 744 (1996) 55-61.
- 98 Fanali, S. and Camera, E.: Use of methylamino β -cyclodextrin in capillary electrophoresis. Resolution of acidic and basic enantiomers. *Chromatographia*, 43 (1996) 247-253.
- 99 Figeys, D. and Dovichi, N.J.: Change in conductivity in non-cross-linked polyacrylamide capillary electrophoresis. Effects of aging polyacrylamide and buffer composition. *J. Chromatogr. A*, 744 (1996) 333-339.
- 100 García, M.A., Díez-Masa, J.C. and Marina, M.L.: Correlation between the logarithm of capacity factors for aromatic compounds in micellar electrokinetic chromatography and their octanol-water partition coefficients. *J. Chromatogr. A*, 742 (1996) 251-256.
- 101 Gluck, S.: Rapid problem solving using capillary electrophoresis. *LC-GC Int.*, 9 (1996) 556-562.
- 102 Gluck, S.: Rapid problem solving using capillary electrophoresis. *LC-GC*, 14 (1996) 576-580; *C.A.*, 125 (1996) 131235c.
- 103 Guo, R.: (Capillary electrophoresis techniques: Principles and applications). *Zhongguo Yaoxue Zazhi*, 31 (1996) 108-110; *C.A.*, 125 (1996) 52568k - a review with 17 refs.
- 104 Guo, X., Chu, X., Dai, Z., Lin, B. and Chen, L.: (Preparation and evaluation of non-gel sieving column of capillary electrophoresis). *Fenxi Huaxue*, 24 (1996) 853-857; *C.A.*, 125 (1996) 106251x.
- 105 Guttman, A.: Effect of temperature on separation efficiency in capillary gel electrophoresis. *TrAC*, 15 (1996) 194-198.
- 106 Haber, C., Jones, W.R., Soglia, J., Surve, M.A., McGlynn, M., Caplan, A., Reineck, J.R. and Krstanovic, C.: Conductivity detection in capillary electrophoresis - a powerful tool in ion analysis. *J. Capillary Electrophor.*, 3 (1996) 1-11; *C.A.*, 125 (1996) 136968d.
- 107 Hansen, D.K. and Lunte, S.M.: Monitoring biological events by microdialysis sampling with capillary electrophoresis separations. *Am. Lab. (Shelton)*, 28 (1996) 26-30; *C.A.*, 125 (1996) 136665c - a review with 18 refs.
- 108 He, J. and Deng, Y.: (Laser photothermal detection in high performance capillary electrophoresis). *Fenxi Ceshi Xuebao*, 15 (1996) 79-83; *C.A.*, 125 (1996) 103809z - a review with 22 refs.
- 109 Hietpas, P.B., Gilman, S.D., Lee, R.A., Wood, M.R., Winograd, N. and Ewing, A.G.: Development of voltammetric methods, capillary electrophoresis and TOF SIMS imaging for constituent analysis of single cells. In: Hoch, H.C., Jelinski, L.W. and Craighead, H.G. (Editors), *Nanofabr. Biosyst.*, Cambridge University Press, Cambridge, 1996, pp. 139-158; *C.A.*, 125 (1996) 215916p - a review with many refs.
- 110 Hogan, B.L.: Capillary electrophoresis-based methods for *in vivo* analysis: single cell analysis and microdialysis sampling. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 467-502; *C.A.*, 125 (1996) 269663x.
- 111 Hows, M.E.P. and Perrett, D.: A technique for capillary joining in capillary electrophoresis. *Chromatographia*, 43 (1996) 200-204.
- 112 Huang, B., Li, J. and Cheng, J.: (Construction of end-column chemiluminescence detection system for capillary electrophoresis). *Gaodeng Xuexiao Huaxue Xuebao*, 17 (1996) 529-530; *C.A.*, 125 (1996) 130950v.
- 113 Huang, M., Bigelow, M. and Byers, M.: Effects of surface coatings on CE separations of pharmaceutically active compounds. *LC-GC Int.*, 9 (1996) 658-664.
- 114 Imasaka, T.: Liquid chromatography and capillary electrophoresis with laser fluorometric detection. *Methods Chromatogr.*, 1 (1996) 123-149; *C.A.*, 125 (1996) 103814x - a review with 31 refs.
- 115 Jacquier, J.C. and Desbène, P.L.: Determination of critical micelle concentration by capillary electrophoresis. Application to organo-saline electrolytes. *J. Chromatogr. A*, 743 (1996) 307-314.
- 116 Janini, G.M., Muschik, G.M. and Issaq, H.J.: Micellar electrokinetic chromatography in zero-electroosmotic flow environment. *J. Chromatogr. B*, 683 (1996) 29-35.
- 117 Jankowiak, R., Zamzow, D., Ding, W. and Small, G.J.: Capillary electrophoresis - fluorescence line-narrowing system for on-line structural characterization of molecular analytes. *Anal. Chem.*, 68 (1996) 2549-2553.
- 118 Johansson, J., Witte, D.T., Larsson, M. and Nilsson, S.: Real-time fluorescence imaging of isotachopheric preconcentration for capillary electrophoresis. *Anal. Chem.*, 68 (1996) 2766-2770.
- 119 Johnson, K.L., Tomlinson, A.J. and Naylor, S.: Capillary conditioning and electrospray ionization configuration for optimal capillary electrophoresis/mass spectrometry performance. *Rapid Commun. Mass Spectrom.*, 10 (1996) 1159-1160; *C.A.*, 125 (1996) 137144u.
- 120 Kambara, H., Takahashi, S., Anazawa, T., Yamada, T. and Kohara, Y.: Capillary array electrophoresis system. *Eur. Pat. Appl. EP 723,149* (Cl. G01N27/447), 24 Jul. 1996, JP Appl. 95/6,264, 19 Jan. 1995; 15 p.; *C.A.*, 125 (1996) 157395e.
- 121 Kaupp, S., Steffen, R. and Wätzig, H.: Characterisation of inner surface and adsorption phenomena in fused-silica capillary electrophoresis capillaries. *J. Chromatogr. A*, 744 (1996) 93-101.
- 122 Kojima, K.: (Electrophoresis system integrated on a silicon chip). *Kuromatogurafi*. 17 (1996) 124-125; *C.A.*, 125 (1996) 68645u.
- 123 Li, G. and Xiao, L.: (Electrochemical detectors used in high performance capillary electrophoresis). *Fenxi Ceshi Xuebao*, 15 (1996) 84-90; *C.A.*, 125 (1996) 103810t - a review with 41 refs.
- 124 Liang, H., Yu, Q., Gu, J., Wang, Z. and Fu, R.: Migration equation of solute in high performance capillary zone electrophoresis. *Chin. Sci. Bull.*, 41 (1996) 175-176; *C.A.*, 125 (1996) 162556n.
- 125 Lillard, S.J.: Single cell analysis by capillary electrophoresis with laser-induced native fluorescence detection. *Diss. Abstr. Int.*, B, 57 (1996) 2531; *C.A.*, 125 (1996) 216156c.

- 126 Lin, M.: Analytical methods development and applications involving HPLC, CE, PO-CL and FIA (capillary electrophoresis, flow injection analysis, chemiluminescence, porphyrins). Avail. *Univ. Microfilms Int.*, Order No. DA9616548, 1996, 194 p.; C.A., 125 (1996) 131272n.
- 127 Liu, Y.-M. and Sweedler, J.V.: Channel electrophoresis for kinetic assays. *Anal. Chem.*, 68 (1996) 2471-2476.
- 128 Lou, G. and Wang, Y.: (Capillary electrophoresis). *Daxue Huaxue*, 11 (1996) 1-5, 27; C.A., 125 (1996) 85772a.
- 129 Lucy, C.A., Brown, R. and Yeung, K.K.-C.: Separation of positional and structural isomers by cyclodextrin-mediated capillary zone electrophoresis. *J. Chromatogr. A*, 745 (1996) 9-15.
- 130 Lunte, S.M. and Radzik, D.M.: Principles of capillary electrophoresis. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 3-21; C.A., 125 (1996) 216160z.
- 131 Manabe, T.: (Capillary electrophoresis of biological macromolecules). *Kuromatogurafi*, 17 (1996) 104-105; C.A., 125 (1996) 81073a.
- 132 Matsubara, N. and Terabe, S.: Micellar electrokinetic chromatography. *Methods Enzymol.*, 270(High Resolution Separation and Analysis of Biological Macromolecules, Pt. A) (1996) 678-712; C.A., 125 (1996) 162397m - a review with 67 refs.
- 133 Matsura, T., Inomata, T. and Shimizu, N.: Apparatus for capillary electrophoresis. *Jpn. Kokai Tokkyo Koho JP 08,122,300 [96,122,300]* (Cl. G01N27/447), 17 May 1996, Appl. 94/255,232, 20 Oct. 1994; 7 p.; C.A., 125 (1996) 96952k.
- 134 Nelson, W.M. and Lee, C.S.: Mechanistic studies of partial-filling micellar electrokinetic chromatography. *Anal. Chem.*, 68 (1996) 3265-3269.
- 135 Nelson, W.M., Tang, Q., Harrata, A.K. and Lee, C.S.: On-line partial filling micellar electrokinetic chromatography-electrospray ionization mass spectrometry. *J. Chromatogr. A*, 749 (1996) 219-226.
- 136 Okumura, A., Ito, Y., Sakairi, M. and Koizumi, H.: (Miniaturization of chemical analysis systems). *Kuromatogurafi*, 17 (1996) 126-127; C.A., 125 (1996) 74971p.
- 137 Osuga, T., Sakamoto, H. and Takagi, T.: Hydrodynamic analysis of electroosmotic flow in capillary. *J. Phys. Soc. Jpn.*, 65 (1996) 1854-1858; C.A., 125 (1996) 178379t.
- 138 Paulus, A.: Separation, characterization, and fraction collection in the nanoliter domain with capillary electrophoresis. *Angew. Chem., Int. Ed. Engl.*, 35 (1996) 857-859; C.A., 125 (1996) 29277f - a review with 12 refs.
- 139 Preisler, J. and Yeung, E.S.: Characterization of nonbonded poly(ethylene oxide) coating for capillary electrophoresis via continuous monitoring of electroosmotic flow. *Anal. Chem.*, 68 (1996) 2885-2889.
- 140 Reijenga, J.C., Verheggen, T.P.E.M., Martens, J.H.P.A. and Everaerts, F.M.: Buffer capacity, ionic strength and heat dissipation in capillary electrophoresis. *J. Chromatogr. A*, 744 (1996) 147-153.
- 141 Ren, X.: Comparison of polypropylene hollow fiber and fused silica columns for capillary electrophoresis. Avail. *Univ. Microfilms Int.*, Order No. DA9613848, 1995, 129 p.; C.A., 125 (1996) 131002z.
- 142 Ren, X., Shen, Y. and Lee, M.L.: Poly(ethylene-propylene glycol)-modified fused-silica columns for capillary electrophoresis using epoxy resin as intermediate coating. *J. Chromatogr. A*, 741 (1996) 115-122.
- 143 Robson, M.M., Roulin, S., Shariff, S.M., Raynor, M.W., Bartle, K.D., Clifford, A.A., Myers, P., Euerby, M.R. and Johnson, C.M.: Capillary electrochromatography using columns packed with a supercritical fluid carrier. *Chromatographia*, 43 (1996) 313-321.
- 144 Rogan, M. and Altria, K.: Successful chiral separations using capillary electrophoresis. *Spec. Chem.*, 16 (1996) 56-64; C.A., 125 (1996) 177514w - a review with many refs.
- 145 Sandoval, J.E. and Chen, S.-M.: Method for the accelerated measurement of electroosmosis in chemically modified tubes for capillary electrophoresis. *Anal. Chem.*, 68 (1996) 2771-2775.
- 146 Sun, X.: The study of capillary electrophoresis: polyimides, nylon and non-aqueous analysis. Avail. *Univ. Microfilms Int.*, Order No. DA9624241, 1996, 116 p.; C.A., 125 (1996) 143750e.
- 147 Taga, A. and Honda, S.: Derivatization at capillary inlet in high-performance capillary electrophoresis. Its reliability in quantification. *J. Chromatogr. A*, 742 (1996) 243-250.
- 148 Towns, J.K. and Regnier, F.E.: Column technologies for capillary electrophoresis. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 23-80; C.A., 125 (1996) 269414s - a review with many refs.
- 149 Van der Moolen, J.N., Boelens, H.F.M., Poppe, H. and Smit, H.C.: Origin and correction of bias caused by sample injection and detection in capillary zone electrophoresis. *J. Chromatogr. A*, 744 (1996) 103-113.
- 150 Vandeppeer, J., Trenery, V.C. and Keogh, G.: Some examples of the analysis of complex samples by micellar electrokinetic capillary chromatography with photodiode array detection. *Electrophoresis (Weinheim)*, 17 (1996) 1361-1366.
- 151 Vijayalakshmi, M.A. and Haupt, K.: Capillary affinity electrophoresis, affinity matrix for implementing said electrophoresis and method of manufacture. *PCT Int. Appl. WO 96 08,716* (Cl. G01N27/447), 21 Mar. 1996, FR Appl. 94/10,928, 14 Sep. 1994; 10 pp.; C.A., 125 (1996) 29597k.
- 152 Wachs, T., Sheppard, R.L. and Henion, J.: Design and applications of a self-aligning liquid junction-electrospray interface for capillary electrophoresis-mass spectrometry. *J. Chromatogr. B*, 685 (1996) 335-342.
- 153 Williams, R.L. and Vigh, G.: Polyethylene glycol monomethyl ether sulfate-based background electrolytes in capillary electrophoresis. *J. Chromatogr. A*, 744 (1996) 75-80.
- 154 Wu, J., Zou, H., Ma, W., Lei, K. and Huang, S.: (Capillary zone electrophoresis of rare earth metal ions, amines and amino acids with conductivity detection). *Fenxi Ceshi Xuebao*, 15 (1996) 37-40; C.A., 125 (1996) 130991j.
- 155 Xiong, S., Li, J. and Cheng, J.: Multicomponent analysis of highly overlapped capillary electrophoretic peaks using multi-wavelength charge-coupled devices detection. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 2129-2141.
- 156 Yoshida, M., Okuyama, T., Itoh, Y. and Takada, Y.: (Capillary electrophoresis with a micropump). *Kuromatogurafi*, 17 (1996) 102-103; C.A., 125 (1996) 81072z.
- 157 Zhou, W., Xu, L., Wu, M., Xu, L. and Wang, E.: Utilization of platinum-modified carbon fiber electrode in capillary electrophoresis with amperometric detection. *Chin. Sci. Bull.*, 41 (1996) 34-37; C.A., 125 (1996) 157318g.

- 158 Zhu, M.D. and Siebert, C.J.: Suppression of electroendosmosis during electrophoresis in gel-free polymer media by use of charged polymers. *U.S. US 5,545,302* (Cl. 204-454; GO1N27/26), 13 Aug. 1996, US Appl. 136,689, 14 Oct. 1993; 12 pp.; *C.A.*, 125 (1996) 269853j.

See also 1, 4, 10, 12, 15, 19, 23, 45, 48, 50, 53, 54, 58, 61, 63, 67, 77, 78, 79, 160, 162, 164, 165, 168, 170, 171, 176, 189, 193, 194, 197, 198, 210, 236, 267, 271, 282, 287, 298, 312, 325, 339, 343, 429, 430, 433, 435, 439, 460, 463, 487, 630, 632, 633, 634, 665, 669, 687, 714, 748, 779, 783, 802, 803, 804, 818, 827, 831, 834, 840, 842, 844, 846, 856, 857, 860, 861, 864, 867, 868, 869, 875, 876, 878, 879, 881, 883, 892, 897, 899, 909, 911, 912, 914, 915, 916, 917, 919, 922.

4f. Isotachophoresis

See 871.

4g. Enantiomers, separation

- 159 Ahmed, A., Ibrahim, H., Pastoré, F. and Lloyd, D.K.: Relationship between retention and effective selector concentration in affinity capillary electrophoresis and high-performance liquid chromatography. *Anal. Chem.*, 68 (1996) 3270-3273.
- 160 Bjørnsdóttir, I., Hansen, S.H. and Terabe, S.: Chiral separation in non-aqueous media by capillary electrophoresis using the ion-pair principle. *J. Chromatogr. A*, 745 (1996) 37-44.
- 161 Clothier, J.G., Jr.: Chiral separations using bile salts in capillary electrophoresis (micelles, surfactants). Avail. *Univ. Microfilms Int.*, Order No. DA9617069, 1995, 136 pp.; *C.A.*, 125 (1996) 81077e.
- 162 Clothier, J.G., Jr., Daley, L.M. and Tomellini, S.A.: Effects of bile salt structure on chiral separations with mixed micelles of bile salts and polyoxyethylene ethers using micellar electrokinetic capillary chromatography. *J. Chromatogr. B*, 683 (1996) 37-45.
- 163 Desbene, P.L. and Fulchic, C.E.: Utilization of *n*-alkyl- β -D-glucopyranosides in enantiomeric separation by micellar electrokinetic chromatography. *J. Chromatogr. A*, 749 (1996) 257-269.
- 164 Fanali, S. and Camera, E.: Use of cyclodextrins in the capillary electrophoretic separation of erythro- and threo-mefloquine enantiomers. *J. Chromatogr. A*, 745 (1996) 17-23.
- 165 Ferguson, P.D., Goodall, D.M. and Loran, J.S.: Systematic approach to the treatment of enantiomeric separations in capillary electrophoresis and liquid chromatography. III. A binding constant-retention factor relationship and effects of acetonitrile on the chiral separation of tioconazole. *J. Chromatogr. A*, 745 (1996) 25-35.
- 166 Gahm, K.-H. and Stalcup, A.M.: Sulfated cyclodextrins for the chiral separations of catecholamines and related compounds in the reversed electrophoretic polarity mode. *Chirality*, 8 (1996) 316-324; *C.A.*, 125 (1996) 266123k.
- 167 Gasper, M.P., Berhod, A., Nair, U.B. and Armstrong, D.W.: Comparison and modeling study of vancomycin, ristocetin A, and teicoplanin for CE enantioseparations. *Anal. Chem.*, 68 (1996) 2501-2514.

- 168 Ingelse, B.A., Claessens, H.C., van der Wal, S., Duchateau, A.L.L. and Everaerts, F.M.: Influence of the nature of the buffer on chiral separation in capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 61-71.

- 169 Janini, G.M., Muschik, G.M. and Issaq, H.J.: Electrokinetic chromatography in suppressed electroosmotic flow environment: use of a charged cyclodextrin for the separation of enantiomers and geometric isomers. *Electrophoresis (Weinheim)*, 17 (1996) 1575-1583.

- 170 Liu, L. and Nussbaum, M.A.: Control of enantiomer migration order in capillary electrophoresis separations using sulfobutyl ether beta-cyclodextrin. *J. Pharm. Biomed. Anal.*, 14 (1995) 65-72.

- 171 Liu, L., Osborne, L.M. and Nussbaum, M.A.: Development and validation of a combined potency assay and enantiomeric purity method for a chiral pharmaceutical compound using capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 45-52.

- 172 Rundlett, K.L.M.: Macrocyclic antibiotics as new chiral selectors for capillary electrophoresis and use of capillary electrophoresis to evaluate binding behavior. *Diss. Abstr. Int., B*, 57 (1996) 2532; *C.A.*, 125 (1996) 242193g.

- 173 Sanchez Pena, M., Zhang, Y., Thibodeaux, S., McLaughlin, M.L., Munoz de la Pena, A. and Warner, I.M.: Synthesis of a water-soluble chiral *N*-acylcyclodextrin-arene amino acid derivative. *Tetrahedron Lett.*, 37 (1996) 5841-5844; *C.A.*, 125 (1996) 276469s.

- 174 Wang, F. and Khaledi, M.G.: Chiral separations by nonaqueous capillary electrophoresis. *Anal. Chem.*, 68 (1996) 3460-3467.

- 175 Wang, Z., Huang, A., Sun, Y. and Sun, Z.: Cyclodextrins as buffer additives for the enantiomeric separation of pinacidil in capillary zone electrophoresis. *J. Chromatogr. A*, 749 (1996) 300-303.

- 176 Zhang, X., Davidian, E.W., Nguyen, T.H., Evans, R.W., Im, S.J. and Barker, G.E.: Investigation of chiral resolution using displacement interactions with polymer networks in capillary affinity zone electrophoresis. *J. Chromatogr. A*, 745 (1996) 1-8.

See also 98, 144, 191, 238, 267, 279, 285, 286, 288, 310, 840, 843, 855, 856, 860, 864, 875, 876, 881, 883.

4h. Two dimensional electrophoresis

- 177 Dunn, M.J. and Corbett, J.M.: Two-dimensional polyacrylamide gel electrophoresis. *Methods Enzymol.*, 271(High Resolution Separation and Analysis of Biological Macromolecules) (1996) 177-203; *C.A.*, 125 (1996) 215968g - a review with 49 refs.

- 178 Lee, C., Harrison, H.H., Qian, Y. and Sensibar, J.A.: Two-dimensional gel electrophoresis of proteins. In: Thomas, J.A. (Editor), *Endocr. Methods, Academic*, San Diego, 1996, pp. 203-219; *C.A.*, 125 (1996) 109167k - a review with 25 refs.

- 179 Merrick, B.A., Patterson, R.M., Hall, R.G., He, C. and Selkirk, J.K.: Preparative two dimensional gel electrophoresis system. *U.S. US 5,534,121* (Cl. 204-459, GO1N27/26), 9 Jul. 1996, Appl. 243,643, 16 May 1994; 20 pp.; *C.A.*, 125 (1996) 109640j.

- 180 Negishi, H., Nakayama, H. and Okuyama, T.: (Further developments of microscale two-dimensional electrophoresis). *Kuro-matogurafi*, 17 (1996) 112-115; *C.A.*, 125 (1996) 81074b.

See also 62, 66, 70, 320, 327, 359, 367, 368, 372, 374, 375, 380, 387, 397, 405, 412, 418, 428, 455, 456, 457, 459, 472, 483, 485, 489, 490, 492, 494, 495, 496, 503, 514, 521, 526, 533, 543, 560, 564, 758, 858.

4i. Other special techniques

- 181 Clifton, M.J., Roux-de Balman, H., Sanchez, V., Bleuzen-Mariotte, V. and Schoot, B.M.: Purification of biological molecules by continuous flow electrophoresis in the second international microgravity laboratory. *J. Biotechnol.*, 47 (1996) 341-352; C.A., 125 (1996) 242167b.
- 182 Desnoyers, S., Bourassa, S. and Poirier, G.G.: High-performance electrophoresis chromatography. *Methods Mol. Biol. (Totowa)*, 59(Protein Purification Protocols) (1996) 371-380; C.A., 125 (1996) 29449p.
- 183 Kobayashi, H., Ishii, N. and Nagaoka, S.: Bioprocessing in microgravity: free flow electrophoresis of *C. elegans* DNA. *J. Biotechnol.*, 47 (1996) 367-376; C.A., 125 (1996) 242169d.
- 184 Raymond, D.E., Manz, A. and Widmer, H.M.: Continuous separation of high molecular weight compounds using a microliter volume free-flow electrophoresis microstructure. *Anal. Chem.*, 68 (1996) 2515-2522.
- 185 Roux de Balman, H., Clifton, M.J., Sanchez, V., Mariotte, V. and Schoot, B.: (Effect of weightlessness on the performance of continuous-flow electrophoresis). *Recent Prog. Genie Procèdes*, 9(42, Genie des Procèdes Complexes) (1995) 87-92; C.A., 125 (1996) 52797j.
- 186 Seaman, G.V.F. and Snyder, R.S.: Electrophoresis in space. *J. Biotechnol.*, 47 (1996) 335-339; C.A., 125 (1996) 242166a.

See also 17, 86, 95, 477, 904.

5. HYDROCARBONS AND HALOGEN DERIVATIVES

5b. Cyclic hydrocarbons, fullerenes

- 187 Liang, H.-Q., Rye, K.A. and Barter, P.J.: Remodelling of reconstituted high density lipoproteins by lecithin:cholesterol acyl-transferase. *J. Lipid Res.*, 37 (1996) 1962-1970.

See also 62, 66, 70, 95, 100, 117, 143.

7. PHENOLS

- 188 Boyce, M.C. and Bennett, I.J.: Complementary role of micellar electrokinetic capillary chromatography and high performance liquid chromatography in the separation of plant phenolics. *Anal. Lett.*, 29 (1996) 1805-1815.
- 189 Chou, C.Y.C., Tsai, T.H., Lin, M.F. and Chen, C.F.: Simultaneous determination of honokiol and magnolol in *Magnolia officinalis* by capillary zone electrophoresis. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 1909-1915.

- 190 Fernandes, J.B., Griffiths, D.W., Bain, H. and Fernandes, F.A.N.: The development and evaluation of capillary electrophoretic methods for the determination of the major phenolic constituents of potato (*Solanum tuberosum*) tubers. *Phytochem. Anal.*, 7 (1996) 253-258; C.A., 125 (1996) 269664y.
- 191 He, Y. and Lee, H.K.: Separation of structural homologues of alkylphenols and isomers of 4-nonylphenol by cyclodextrin-modified micellar electrokinetic chromatography. *J. Chromatogr. A*, 749 (1996) 227-236.
- 192 Lin, C.-E., Hsueh, C.-C., Lin, W.-C. and Chang, C.-C.: Migration behavior and separation of trichlorophenols by capillary zone electrophoresis. *J. Chromatogr. A*, 746 (1996) 295-299.
- 193 Revilla, A.L., Havel, J. and Jandik, P.: Peak splitting observed during capillary electrophoresis of α - and β -naphthols in borate buffer. *J. Chromatogr. A*, 745 (1996) 225-232.
- 194 Tsai, C.-Y. and Her, G.-R.: Capillary zone electrophoresis/electrospray mass spectrometry of priority phenols. *J. Chromatogr. A*, 743 (1996) 315-321.

See also 169.

8. SUBSTANCES CONTAINING HETEROCYCLIC OXYGEN

8a. Flavonoids

- 195 Liang, H.-R., Sirén, H., Riekkola, M.-L., Vuorela, P., Vuorela, H. and Hiltunen, R.: Optimized separation of pharmacologically active flavonoids from *Epimedium* species by capillary electrophoresis. *J. Chromatogr. A*, 746 (1996) 123-129.

9. OXO COMPOUNDS, ETHERS, EPOXIDES AND QUINONES

See 851, 891, 916.

10. CARBOHYDRATES

10a. Mono and oligosaccharides. Structural studies

- 196 Chang, L., Guo, Q., Yu, Z. and Zhu, A.: (Separation of oligosaccharides as their ethyl *p*-aminobenzoate derivatives by high performance capillary electrophoresis). *Fenxi Huaxue*, 24 (1996) 750-754; C.A., 125 (1996) 184456g.
- 197 Choi, O.-K., Kim, C.-G., Kim, Y.-D., Kim, H. and Jo, J.-S.: Determination of 2-keto-L-gulonol, 2-keto-D-gluconol and 2,5-diketo-D-gluconol acids by capillary zone electrophoresis. *J. Chromatogr. A*, 745 (1996) 249-254.
- 198 Evangelista, R.A., Chen, F.-T.A. and Guttman, A.: Reductive amination of N-linked oligosaccharides using organic acid catalysts. *J. Chromatogr. A*, 745 (1996) 273-280.
- 199 Greve, K.F., Hughes, D.E. and Karger, B.L.: Capillary electrophoretic examination of underivatized oligosaccharide mixtures released from immunoglobulin G antibodies and CTLA4lg fusion protein. *J. Chromatogr. A*, 749 (1996) 237-245.

- 200 Guttman, A., Brunet, S. and Cooke, N.: Capillary electrophoresis fingerprinting of carbohydrates in the biopharmaceutical and food and beverage industries. *LC-GC*, 14 (1996) 788-792; *C.A.*, 125 (1996) 242056q.
- 201 Guttman, A., Sperling, E. and Mazsaroff, I.: Performance and economics in micropreparative capillary electrophoresis of oligosaccharides. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 1539-1549.
- 202 Honda, S., Kawakami, S., Saitoh, Y., Usui, T., Horita, H., Taga, A. and Suzuki, S.: (Ultramicro analysis of carbohydrate chains by HPCE with LIF). *Kuromatogurafi*, 17 (1996) 110-111; *C.A.*, 125 (1996) 103878w.
- 203 Jackson, P.: The analysis of fluorophore-labeled carbohydrates by polyacrylamide gel electrophoresis. *Mol. Biotechnol.*, 5 (1996) 101-123; *C.A.*, 125 (1996) 80833m - a review with 108 refs.
- 204 Lin, S.-B., Kao, C.-F. and Kan, L.-S.: The quantitative study of the triplex formation by gel electrophoresis. *Bull. Inst. Chem., Acad. Sin.*, 43 (1996) 89-94; *C.A.*, 125 (1996) 248311r.
- 205 Meguro, T. and Suzuki, M.: (Clinical evaluation of urinary oligosaccharides by using fluorophore-assisted carbohydrate electrophoresis (FACE) system). *Seibutsu Butsuri Kagaku*, 40 (1996) 119-122; *C.A.*, 125 (1996) 162584v.
- 206 Sulochana, N., Nagarajan, P. and Kamalina, C.M.: Electrophoretic studies of some quercetin glycosides. *Chem. Commun. (Cambridge)*, No. 10 (1996) 1229-1230; *C.A.*, 125 (1996) 114963w.
- 207 Zhang, Z., Hu, Z. and Yang, G.: Separation and determination of D-fluconic acid produced during fermentation by capillary zone electrophoresis. *Anal. Lett.*, 29 (1996) 2025-2037.
- 208 Zhang, Z.P., Hu, Z.D. and Yang, G.L.: Separation and determination of D-gluconic acid produced during fermentation by capillary zone electrophoresis. *Anal. Lett.*, 29 (1996) 2025-2037; *C.A.*, 125 (1996) 193499a.
- See also 219.
- 10b. *Polysaccharides, mucopolysaccharides, lipopolysaccharides*
- 209 Gallagher, J.T., Turnbull, J.E. and Hopwood, J.J.: Sequence analysis of polysaccharides with exoglycosidases, following partial depolymerization. *Brit. UK Pat. Appl. GB 2,295,012 (Cl. C12Q1/34)*, 15 May 1996, GB Appl. 94/21,819, 29 Oct. 1994; 29 pp.; *C.A.*, 125 (1996) 81306d.
- 210 Ogawa, T., Terabayashi, T. and Kawanishi, Y.: Analysis of oligo- and poly-N-acetylneuraminic acids and their lactones by capillary electrophoresis. *J. Chromatogr. A*, 741 (1996) 295-298.
- 211 Okafo, G.N., Burrow, L.M., Neville, W., Truneh, A., Smith, R.A.G., Reff, M. and Camilleri, P.: Simple differentiation between core-fucosylated and nonfucosylated glycans by capillary electrophoresis. *Anal. Biochem.*, 240 (1996) 68-74.
- 212 Volpi, N.: Electrophoresis separation of glycosaminoglycans on nitrocellulose membranes. *Anal. Biochem.*, 240 (1996) 114-118.
- 213 Volpi, N.: Inhibition of human leukocyte elastase activity by heparins: influence of charge density. *Biochim. Biophys. Acta*, 1290 (1996) 299-307.
- 10c. *Glycoproteins and their constituents*
- 214 Bergmann, J., Jaehde, U. and Schunack, W.: The use of capillary zone electrophoresis to monitor alterations in glycoprotein microheterogeneity. *Pharmazie*, 51 (1996) 644-646.
- 215 Bonfichi, R.: Capillary electrophoresis of glycosylated proteins performed on a conventional capillary gas chromatographic column. *J. Chromatogr. A*, 741 (1996) 139-145.
- 216 Castillo, G.M., Cummings, J.A., Ngo, C., Yang, W. and Snow, A.D.: Novel purification and detailed characterization of perlecan isolated from the Engelbreth-Holm-Swarm tumor for use in an animal model of fibrillar A β amyloid persistence in brain. *J. Biochem. (Tokyo)*, 120 (1996) 433-444.
- 217 Chen, A.B., Rickel, C.A., Flanigan, R.A., Hunt, F.G. and Moorhouse, K.G.: Comparison of ampholytes used for slab gel and capillary isoelectric focusing of recombinant tissue-type plasminogen activator glycoforms. *J. Chromatogr. A*, 744 (1996) 279-284.
- 218 Chen, Y.: (Capillary electrophoretic analysis of glycoform of glycoproteins). *Fushun Shiyou Xueyuan Xuebao*, 16 (1996) 68-69; *C.A.*, 125 (1996) 269678f.
- 219 Honda, S.: (Application of capillary electrophoresis to the analyses of carbohydrates and glycoproteins). *Seibutsu Butsuri Kagaku*, 40 (1996) 147-154; *C.A.*, 125 (1996) 80841n - a review with 21 refs.
- 220 Keo, N., Safarian, Z., Liu, C.-M. and Wang, H.-P.: Capillary electrophoresis of glycosylated proteins. *PCT Int. Appl. WO 96 22,524 (Cl. G01N27/447)*, 25 Jul. 1996, US Appl. 373,680, 17 Jan. 1995; 28 pp.; *C.A.*, 125 (1996) 162760z.
- 221 Lanning, C.L., Fine, R.L., Corcoran, J.J., Ayad, H.M., Rose, R.L. and Abou-Donia, M.B.: Tobacco budworm P-glycoprotein: biochemical characterization and its involvement in pesticide resistance. *Biochim. Biophys. Acta*, 1291 (1996) 155-162.
- 222 Liu, C.: Trace determination of glycoproteins by mass spectrometry coupled to high performance liquid chromatography and capillary electrophoresis. Avail. *Univ. Microfilms Int.*, Order No. DA9621902, 1996, 180 pp.; *C.A.*, 125 (1996) 136818e.
- 223 Mai, A., Jung, S.-K., Tachikawa, H. and Fujimoto, D.: A novel β -galactoside-binding lectin in cultured murine lymphocytic leukemia cells. *J. Biochem. (Tokyo)*, 120 (1996) 478-480.
- 224 Novotny, M.V.: Glycoconjugate analysis by capillary electrophoresis. *Methods Enzymol.*, 27(High Resolution Separation and Analysis of Biological Macromolecules) (1996) 319-347; *C.A.*, 125 (1996) 215971c.
- 225 Oda, R.P. and Landers, J.P.: High-resolution glycoprotein analysis using capillary electrophoresis. *Mol. Biotechnol.*, 5 (1996) 165-170; *C.A.*, 125 (1996) 136966b.
- 226 Seta, N., Barnier, A., Hochedez, F., Besnard, M.-A. and Durand, G.: Diagnostic value of Western blotting in carbohydrate-deficient glycoprotein syndrome. *Clin. Chim. Acta*, 254 (1996) 1131-140.
- 227 Shimizu, K., Katoh, H., Yamashita, F., Tanaka, M., Tanikawa, K., Taketa, K., Satomura, S. and Matsuura, S.: Comparison of carbohydrate structures of serum α -fetoprotein by sequential glycosidase digestion and lectin affinity electrophoresis. *Clin. Chim. Acta*, 254 (1996) 23-40.

See also 25, 98, 241.

- 228 Starr, C.M.: Characterization of the carbohydrate moieties attached to bio-engineered glycoproteins using fluorophore-assisted carbohydrate electrophoresis. In: Geisow, M.J. and Epton, R. (Editors), *Perspect. Protein Eng. Complementary Technol., Collect. Pap., Int. Symp., 3rd 1994*, Mayflower Worldwide, Kingswinford, 1995, pp. 299-303; *C.A.*, 125 (1996) 109440u.
- 229 Streets, A.J., Brooks, S.A., Dwek, M.V. and Leatham, A.J.: Identification, purification and analysis of a 55 kDa lectin binding glycoprotein present in breast cancer tissue. *Clin. Chim. Acta*, 254 (1996) 47-61.
- 230 Thorne, J.M., Goetzinger, W.K., Chen, A.B., Moorhouse, K.G. and Karger, B.L.: Examination of capillary zone electrophoresis, capillary isoelectric focusing and sodium dodecyl sulfate capillary electrophoresis for the analysis of recombinant tissue plasminogen activator. *J. Chromatogr. A*, 744 (1996) 155-165.
- 231 Volpi, N.: Purification of heparin, dermatan sulfate and chondroitin sulfate from mixtures by sequential precipitation with various organic solvents. *J. Chromatogr. B*, 685 (1996) 27-34.
- 232 Xing, J.Z. and Richards, R.M.E.: Determination of peptidoglycan-associated protein in *Escherichia coli* NCIB 8545 by capillary zone electrophoresis. *J. Chromatogr. A*, 740 (1996) 273-278.
- 233 Yamaguchi, H. and Uchida, M.: A chaperone-like function of intramolecular high-mannose chains in the oxidative refolding of bovine pancreatic RNase B. *J. Biochem. (Tokyo)*, 120 (1996) 474-477.
- 234 Young, K.D.: A simple gel electrophoretic method for analyzing the muropeptide composition of bacterial peptidoglycan. *J. Bacteriol.*, 178 (1996) 3962-3966; *C.A.*, 125 (1996) 109434v.
- 235 Zhuang, C., Murata, T., Usui, T., Kawagishi, H. and Kobayashi, K.: Purification and characterization of a lectin from the toxic mushroom *Amanita pantherina*. *Biochim. Biophys. Acta*, 1291 (1996) 40-44.
- See also 202, 497.
11. ORGANIC ACIDS AND LIPIDS
- 11a. *Organic acids and simple esters*
- 236 Gluck, S.J., Steele, K.P. and Benkő, M.H.: Determination of acidity constants of monoprotic and diprotic acids by capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 117-125.
- 237 Hiraoka, A., Arato, T. and Tominaga, I.: Capillary zone electrophoretic determination of 5-hydroxyindoleacetic acid and homovanillic acid in cerebrospinal fluid from patients with neuropsychiatric disorders. *Seibutsu Butsuri Kagaku*, 40 (1996) 193-197; *C.A.*, 125 (1996) 244763s.
- 238 Trute, A. and Nahrstedt, A.: Separation of rosmarinic acid enantiomers by three different chromatographic methods (HPLC, CE, GC) and the determination of rosmarinic acid in *Hedera helix* L. *Phytochem. Anal.*, 7 (1996) 204-208; *C.A.*, 125 (1996) 109268u.
- See also 12, 897.
- 11c. *Lipids and their constituents*
- 239 Brooks, B.W., Garcia, M.M., Robertson, R.H. and Lior, H.: Electrophoretic and immunoblot analysis of *Campylobacter fetus* lipopolysaccharides. *Vet. Microbiol.*, 51 (1996) 105-114; *C.A.*, 125 (1996) 189923s.
- 240 He, J.-L., Li, H.-P., Chen, L. and Chen, W.-Z.: (Micellar electrokinetic capillary chromatographic analysis of platelet activating factor in human blood by indirect ultraviolet detection). *Gaodeng Xuexiao Huaxue Xuebao*, 17 (1996) 1198-1202; *C.A.*, 125 (1996) 162705k.
- 241 Kim, J.S., Reuhs, B.L., Rahman, M.M., Ridley, B. and Carlson, R.W.: Separation of bacterial capsular and lipopolysaccharides by preparative electrophoresis. *Glycobiology*, 6 (1996) 433-437; *C.A.*, 125 (1996) 162559r.
- 11d. *Lipoproteins and their constituents*
- 242 Allan, C.M. and Taylor, J.M.: Expression of a novel apolipoprotein (ApoC-IV) causes hypertriglyceridemia in transgenic mice. *J. Lipid Res.*, 37 (1996) 1510-1518.
- 243 Atalio-Setala, K., Weistock, P.H., Bisgaier, C.L., Wu, I., Smith, J.D. and Breslow, J.L.: Further characterization of the metabolic properties of triglyceride-rich lipoproteins from human and mouse apoC-III transgenic mice. *J. Lipid Res.*, 37 (1996) 1802-1811.
- 244 Bell, J.D., Barnant, M.I., Parkes, H.G., Thomas, E.I., Brennan, C.H., Cunnane, S.C. and Daguelie, P.C.: Effect of N-3 fatty acids on the NMR profile of plasma lipoproteins. *J. Lipid Res.*, 37 (1996) 1664-1674.
- 245 Clay, M.A. and Barter, P.J.: Formation of new-HDL particles from lipid-free apolipoprotein A-I. *J. Lipid Res.*, 37 (1996) 1722-1732.
- 246 Cruzado, I.D., Hu, A.Z. and Macfarlane, R.D.: Influence of dodecyl sulfate ions on the electrophoretic mobilities of lipoprotein particles measured by HPCE. *J. Capillary Electrophor.*, 3 (1996) 25-29; *C.A.*, 125 (1996) 136969e.
- 247 Edelstein, C., Italia, J.A., Klezovitch, O., Scanu, A.M.: Functional and metabolic differences between elastase-generated fragments of human lipoprotein(A) and apolipoprotein(A). *J. Lipid Res.*, 37 (1996) 1786-1801.
- 248 Gaynor, P.M., Zhang, W.Y., Sakhezadeh, B., Pettiford, B. and Kruth, H.S.: Cholesterol accumulation in human cornea: evidence that extracellular cholesteryl ester-rich lipid particles deposit independently of from cells. *J. Lipid Res.*, 37 (1996) 1842-1848.
- 249 Giry, C., Giroux, L.M., Roy, M., Davignon, J. and Minnich, A.: Characterization of inherited scavenger overexpression and abnormal, macrophage phenotype a normolipidemic subject with planar xanthomas. *J. Lipid Res.*, 37 (1996) 1422-1435.
- 250 Hailer, S., Pogarell, O., Keller, C. and Wolfram, G.: Effect of fluvastatin or bezafibrate on the distribution of high density lipoprotein subpopulations in patients with familial hypercholesterolemia. *Arzneim.-Forsch.*, 46 (1996) 879-883.
- 251 Halvorsen, B., Brude, I., Drevon, C.A., Nyson, J., Ose, I., Christiansen, E.N. and Nenseter, M.S.: Effect of homocysteine on copper ion-catalyzed azo compound-initiated, and mononuclear cell-mediated oxidative modification low density lipoprotein. *J. Lipid Res.*, 37 (1996) 1591-1600.

- 252 Hu, A.Z., Cruzado, I.D. and Macfarlane, R.D.: Developing high-performance capillary electrophoresis methods for lipoprotein profiling. *Am. Lab. (Shelton)*, 28 (1996) 18N-18P, 18R; *C.A.*, 125 (1996) 216128v.
- 253 Kleinvelde, H.A., Duif, P.F.C.C.M., Pekelharing, H.L.M. and van Rijn, H.J.M.: Oxidation of lipoprotein(a) and low density lipoprotein containing density gradient ultracentrifugation fractions. *Biochim. Biophys. Acta*, 1303 (1996) 15-21.
- 254 Koch, M., Pfohl, M., Enderle, M.M., Schnauder, G. and Seif, F.J.: Detection of the apolipoprotein B-100^{arg(3500)gln} mutation in familial defective apoB-100 by temperature-gradient gel electrophoresis. *Z. Gastroenterol.*, 34(Suppl. 3) (1996) 16-18; *C.A.*, 125 (1996) 136999q.
- 255 Kraft, H.G., Lingenhel, A., Bader, G., Kostner, G.M. and Utermann, G.: The relative electrophoretic mobility of apo(a) isoforms depends on the gel system: proposal of a nomenclature for apo(a) phenotypes. *Atherosclerosis (Shannon)*, 125 (1996) 53-61; *C.A.*, 125 (1996) 161394w.
- 256 Lehmann, R., Koch, M., Pfohl, M., Voelter, W., Häring, H.-U. and Liebich, H.M.: Screening and identification of familial defective apolipoprotein B-100 in clinical samples by capillary gel electrophoresis. *J. Chromatogr. A*, 744 (1996) 187-194.
- 257 Masson, D., Athias, A. and Lagrost, L.: Evidence for electronegativity of plasma high density lipoprotein-3 as one major determinant of human cholesteryl ester transfer protein activity. *J. Lipid Res.*, 37 (1996) 1579-1590.
- 258 McGuire, K.A., Davidson, W.S. and Jonas, A.: High yield overexpression and characterization of human recombinant proapolipoprotein A-I. *J. Lipid Res.*, 37 (1996) 1519-1528.
- 259 McNamara, J.R., Small, D.M., Li, Z. and Schaefer, E.J.: Differences in LDL subspecies involve alterations in lipid composition and conformational changes in apolipoprotein B. *J. Lipid Res.*, 37 (1996) 1924.
- 260 Murdoch, S.J. and Breckenridge, W.C.: Effect of lipid transfer proteins on lipoprotein lipase induced transformation of VLDL and HDL. *Biochim. Biophys. Acta*, 1303 (1996) 222-232.
- 261 Nauck, M., März, W. and Wieland, H.: Adding albumin normalizes electrophoretic mobility of lipoproteins in sera with high concentrations of free fatty acids. *Clin. Chem. (Washington)*, 42 (1996) 1283-1285.
- 262 Ohta, T., Ikeda, Y., Hattori, S. and Matsuda, I.: Remodeling of HDL containing apoA-I but not apoA-II (LpA-I) by lipoprotein-deficient plasma and hepatic lipase: its effect on the structure and cellular cholesterol-reducing capacity of LpA-I. *Biochim. Biophys. Acta*, 1303 (1996) 137-144.
- 263 Turley, S.D., Burns, D.K., Rosenfield, C.R. and Dietchy, J.M.: Brain does not utilize low density lipoprotein-cholesterol during fetal and neonatal development in the sheep. *J. Lipid Res.*, 37 (1996) 1953-1961.
- 264 Wang, C.-S., Downs, D., Dashti, A. and Jackson, K.W.: Isolation and characterization of recombinant human apolipoprotein C-II expressed in *Escherichia coli*. *Biochim. Biophys. Acta*, 1302 (1996) 224-230.
13. STEROIDS
- 13a. General techniques
- 265 Petersen, J.R., Mohammad, A.A. and Bissell, M.G.: Application of capillary electrophoresis in the separation of steroids of clinical relevance. *Am. Clin. Lab.*, 15 (1996) 14-15; *C.A.*, 125 (1996) 158772n.
- 266 Poole, S.K. and Poole, C.F.: Separation of pharmaceutically important estrogens by micellar electrokinetic chromatography. *J. Chromatogr. A*, 749 (1996) 247-255.
- 13b. Pregnane and androstane derivatives
- 267 Gu, J., Liu, Y., Fu, R. and Wang, X.: (Study on the separation of norgestrel enantiomers by high-performance capillary electrophoresis with supramolecular chemistry). *Fenxi Huaxue*, 24 (1996) 548-550; *C.A.*, 125 (1996) 47937a.
- 268 Noe, S., Boehler, J., Keller, E. and Frahm, A.W.: (Determination of corticosteroids in human serum by micellar electrokinetic capillary chromatography with direct sample injection). *Sci. Pharm.*, 64 (1996) 591-600; *C.A.*, 125 (1996) 266138u.
- See also 866.
- 13c. Estrogens
- See 266.
15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS
- 15a. Terpenes
- 269 D'Hulst, A., Augustijns, P., Arens, S., van Parijs, L., Colson, S., Verbeke, N. and Kinget, R.: Determination of artesunate by capillary electrophoresis with low UV detection and possible applications to analogues. *J. Chromatogr. Sci.*, 34 (1996) 276-281.
16. NITRO AND NITROSO COMPOUNDS
- 270 Kennedy, S., Caddy, B. and Douse, J.: Capillary electrophoresis of explosives. In: Jacob, B. and Bonte, W. (Editors), *Adv. Forensic Sci., Proc. Meet. Int. Assoc. Forensic Sci., 13th 1995*, Verlag Dr. Koester, Berlin, 1995, pp. 204-209; *C.A.*, 125 (1996) 27821e.
- 271 Oehrle, S.A.: Analysis of nitramine and nitroaromatic explosives by capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 233-237.

17. AMINES, AMIDES AND RELATED NITROGEN COMPOUNDS

17a. Amines and polyamines

- 272 Koizumi, H., Sasamoto, K. and Suzuki, Y.: (Separation of aromatic amines by capillary zone electrophoresis using untreated fused silica tubing). *Bunseki Kagaku*, 45 (1996) 771-776; *C.A.*, 125 (1996) 157359w.
- 273 Lillard, S.J., Yeung, E.S. and McCloskey, M.A.: Monitoring exocytosis and release from individual mast cells by capillary electrophoresis with laser-induced native fluorescence detection. *Anal. Chem.*, 68 (1996) 2897-2904.

See also 154, 276, 282, 886.

17b. Catecholamines and their metabolites

- 274 Hu, S., Pang, D.-W., Wang, Z.-L., Cheng, J.-D., Li, Z.-W., Fan, Y.-Z. and Hu, H.-Z.: (Single nerve cell analysis by capillary electrophoresis with amperometric detection). *Gaodeng Xuexiao Huaxue Xuebao*, 17 (1996) 1207-1209; *C.A.*, 125 (1996) 158779v.
- 275 Mahendradatta, M. and Schwedt, G.: (Determination of histamine in foods by capillary electrophoresis and HPLC in comparison). *Dtsch. Lebensm.-Rundsch.*, 92 (1996) 218-221; *C.A.*, 125 (1996) 193792r.
- 276 Rodriguez, I., Lee, H.K. and Li, S.F.Y.: Separation of biogenic amines by micellar electrokinetic chromatography. *J. Chromatogr. A*, 745 (1996) 255-262.

See also 166.

17d. Other amine derivatives and amides (excl. peptides)

- 277 Carter, N. and Trenerry, V.C.: The determination of choline in vitamin preparations, infant formula and selected foods by capillary zone electrophoresis with indirect ultraviolet detection. *Electrophoresis (Weinheim)*, 17 (1996) 1622-1626.
- 278 Liu, J., Zhou, W., You, T., Li, F., Wang, E. and Dong, S.: Detection of hydrazine, methylhydrazine and isoniazide by capillary electrophoresis with a palladium-modified microdisk array electrode. *Anal. Chem.*, 68 (1996) 3350-3353.

See also 160, 240.

18. AMINO ACIDS AND PEPTIDES; CHEMICAL STRUCTURE OF PROTEINS

18a. Amino acids and their derivatives

- 279 Egashira, N., Mutoh, O., Kurauchi, Y. and Ohga, K.: Chiral separation of α -amino acid derivatives by capillary electrophoresis using 6-amino-6-deoxy- β -cyclodextrin and its N-hexyl derivative as chiral selectors. *Anal. Sci.*, 12 (1996) 503-505; *C.A.*, 125 (1996) 131259p.
- 280 Kawamata, M. and Ooba, M.: (Capillary electrophoretic analysis of L- and D-amino acids). *Jpn. Kokai Tokkyo Koho JP 08,114,575 [96,114,575] (Cl. G01N27/447)*, 7 May 1996, *Appl. 94/251,026*, 17 Oct. 1994; 5 pp.; *C.A.*, 125 (1996) 81272q.

- 281 Lada, M.W. and Kennedy, R.T.: Quantitative *in vivo* monitoring of primary amines in rat caudate nucleus using microdialysis coupled by a flow-gated interface to capillary electrophoresis with laser induced fluorescence detection. *Anal. Chem.*, 68 (1996) 2790-2797.
- 282 Lalljie, S.P.D., Vindevogel, J., Murugan, G., Dumont, H.J. and Sandra, P.: Determination of ions, amino acids/amines in the hemolymph of fairy shrimp by capillary electrophoresis with indirect UV and laser-induced fluorescence detection. *Hydrobiologia*, 319 (1996) 103-109; *C.A.*, 125 (1996) 29461m.
- 283 Meulemans, A.: Determination of N-nitroso-L-arginine in rat brain extracts by capillary electrophoresis using photodiode-array detection. *J. Chromatogr. B*, 683 (1996) 273-275.
- 284 Orwar, O., Jardemark, K., Jacobson, I., Moscho, A., Fishman, H.A., Scheller, R.H. and Zare, R.N.: Patch-clamp detection of neurotransmitters in capillary electrophoresis. *Science (Washington)*, 272 (1996) 1779-1782; *C.A.*, 125 (1996) 76639k.
- 285 Sundin, N.G., Dowling, T.M., Grinberg, N. and Bicker, G.: Enantiomeric separation of dansyl amino acids using MECC with a ligand exchange mechanism. *J. Microcolumn Sep.*, 8 (1996) 323-329; *C.A.*, 125 (1996) 276483s.
- 286 Valkó, I.R., Sirén, H. and Riekkola, M.-L.: Chiral separation of dansyl amino acids by capillary electrophoresis: comparison of formamide and N-methylformamide as background electrolytes. *Chromatographia*, 43 (1996) 242-246.
- 287 Weber, P.L.: Capillary electrophoresis in the study of amino acids. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 327-344; *C.A.*, 125 (1996) 215965d - a review with many refs.
- 288 Yowell, G.G., Fazio, S.D. and Vivilecchia, R.V.: Enantiomeric separation of N-tert.-butoxycarbonyl amino acids by capillary electrophoresis using hydroxypropyl-substituted cyclodextrins. *J. Chromatogr. A*, 745 (1996) 73-79.
- 289 Zeece, M.G., Chu, Q., Jones, S.J., Woods, T.L. and Reville, W.J.: Determination of 3-methylhistidine by capillary electrophoresis. *J. Capillary Electrophor.*, 3 (1996) 55-59; *C.A.*, 125 (1996) 81079g.

See also 136, 147, 154, 163, 169.

18b. Peptides, peptidic and proteinous hormones, growth factors

- 290 Borowicz, B. and Domaniewski, J.: Analysis of the low molecular weight nuclear polypeptide by isoelectrofocusing of nuclear proteins first separated by gel electrophoresis in SDS. *Arch. Vet. Pol.*, 34 (1994, Pub. 1996) 241-247; *C.A.*, 125 (1996) 216127u.
- 291 Bouaïcha, N., Rivasseau, C., Hennion, M.-C. and Sandra, P.: Detection of cyanobacterial toxins (microcystins) in cell extracts by micellar electrokinetic chromatography. *J. Chromatogr. B*, 685 (1996) 53-57.
- 292 Brüggemann, O., Meder, M. and Freitag, R.: Analysis of amatoxins α -amanitin and β -amanitin in toadstool extracts and body fluids by capillary zone electrophoresis with photodiode array detection. *J. Chromatogr. A*, 744 (1996) 167-176.
- 293 Brunati, A.M., Bordin, L., Clari, G. and Moret, V.: The Lyn-catalyzed Tyr phosphorylation of the transmembrane band-3 protein of human erythrocytes. *Eur. J. Biochem.*, 240 (1996) 394-399.

- 294 Dai, Y. and Tang, J.-G.: Characteristic, activity and conformational studies of [A6-Ser, A11-Ser]-insulin. *Biochim. Biophys. Acta*, 1296 (1996) 63-68.
- 295 Hammerling, U., Kroon, R., Wilhelmsen, T. and Sjödin, L.: *In vitro* bioassay for human erythropoietin based on proliferative stimulation of an erythroid cell line and analysis of carbohydrate-dependent microheterogeneity. *J. Pharm. Biomed. Anal.*, 14 (1996) 1455-1469.
- 296 Idei, M., Dibó, G., Bogdán, K., Mező, G., Horváth, A., Érchegyi, J., Mészáros, G., Teplán, I., Kéri, G. and Hudecz, F.: Analysis of macromolecular branched chain polypeptides by capillary electrophoresis and micellar electrokinetic chromatography. *Electrophoresis (Weinheim)*, 17 (1996) 1357-1360.
- 297 Major, H.J. and Ashcroft, A.E.: Analysis of a standard peptide mixture by capillary electrophoresis with mass spectrometry and with tandem mass spectrometry. *Rapid Commun. Mass Spectrom.*, 10 (1996) 1421-1426; *C.A.*, 125 (1996) 216305a.
- 298 McNeerney, T.M., Watson, S.K., Sim, J.-H. and Bridenbaugh, R.L.: Separation of recombinant human growth hormone from *Escherichia coli* cell pellet extract by capillary zone electrophoresis. *J. Chromatogr. A*, 744 (1996) 223-229.
- 299 Miller, C. and Rivier, J.: Peptide chemistry: development of high-performance liquid chromatography and capillary zone electrophoresis. *Biopolymers*, 40 (1996) 265-317; *C.A.*, 125 (1996) 109184p - a review with 124 refs.
- 300 Onyewuenyi, N. and Hawkins, P.: Separation of toxic peptides (microcystins) in capillary electrophoresis, with the aid of organic mobile phase modifiers. *J. Chromatogr. A*, 749 (1996) 271-277.
- 301 Paňák, K.C., Ruiz, O.A., Giorgieri, S.A. and Díaz, L.E.: Direct determination of glutathione in human blood by micellar electrokinetic chromatography: simultaneous determination of lipamide and lipoic acid. *Electrophoresis (Weinheim)*, 17 (1996) 1613-1616.
- 302 Pinto, D., Arriaga, E., Sia, S., Li, Z. and Dovichi, N.: (Use of a solid phase to label peptide toxins with fluorescent labels and ultrasensitive determination based on capillary-tube electrophoresis). *Ing. Cienc. Quim.*, 16 (1996) 28-29; *C.A.*, 125 (1996) 240349p.
- 303 Seeger, A. and Rinas, U.: Two-step chromatographic procedure for purification of basic fibroblast growth factor from recombinant *Escherichia coli* and characterization of the equilibrium parameters of adsorption. *J. Chromatogr. A*, 746 (1996) 17-24.
- 304 Shihabi, Z.K.: Peptide stacking by acetonitrile-salt mixtures for capillary zone electrophoresis. *J. Chromatogr. A*, 744 (1996) 231-240.
- 305 Survay, M.A., Goodall, D.M., Wren, S.A.C. and Rowe, R.C.: Self-consistent framework for standardising mobilities in free solution capillary electrophoresis: applications to oligoglycines and oligoalanines. *J. Chromatogr. A*, 741 (1996) 99-113.
- 306 Thuncke, F., Kálmán, F., Ma, S., Rathore, A.S. and Horváth, C.: Kinetic study on the *cis-trans* isomerization of peptidyl-proline dipeptides. *J. Chromatogr. A*, 744 (1996) 259-272.
- 307 Timperman, A.T.: Capillary electrophoresis with wavelength-resolved fluorescence for analysis of peptides (tryptophan, tyrosine). Avail. Degree-Granting Institution, 1995, 127 pp.; *C.A.*, 125 (1996) 216157d.
- 308 Tomlinson, A.J., Jameson, S. and Naylor, S.: Strategy for isolating and sequencing biologically derived MHC class I peptides. *J. Chromatogr. A*, 744 (1996) 273-278.
- 309 Tong, W. and Yeung, E.S.: Determination of insulin in single pancreatic cells by capillary electrophoresis and laser-induced native fluorescence. *J. Chromatogr. B*, 685 (1996) 35-40.
- 310 Wan, H. and Blomberg, L.G.: Enantiomeric separation by capillary electrophoresis of di- and tripeptides derivatized with 9-fluorenylmethyl chloroformate using vancomycin as chiral selector. *J. Microcolumn Sep.*, 8 (1996) 339-344; *C.A.*, 125 (1996) 248458u.
- 311 Wheat, T.E.: Principles and practice of peptide analysis with capillary zone electrophoresis. *Mol. Biotechnol.*, 5 (1996) 263-273; *C.A.*, 125 (1996) 162390d - a review with 7 refs.
- 312 Zanaboni, G., Grimm, R., Dyne, K.M., Rossi, A., Cetta, G. and Iadarola, P.: Use of capillary zone electrophoresis for analysis of imidodipeptides in urine of prolidase-deficient patients. *J. Chromatogr. B*, 683 (1996) 97-107.
- 313 Zhang, Y.L., Becker, J.M. and Naider, F.R.: Electrophoretic behavior of L- and D-alanine-scanning analogs of a yeast tridecapeptide pheromone in a fused-silica capillary. *Anal. Biochem.*, 241 (1996) 220-227.

See also 234, 340, 487.

18c. Elucidation of structure of proteins and enzymes

- 314 Haughton, M.A. and Capaldi, R.A.: The *Escherichia coli* F₁-ATPase mutant βTyr-297→Cys: functional studies and asymmetry of the enzyme under various nucleotide conditions based on reaction of the introduced Cys with N-ethylmaleimide and 7-chloro-4-nitrobenzofurazan. *Biochim. Biophys. Acta*, 1276 (1996) 154-160.
- 315 Hellman, U.: Identification by sequence analysis after in-gel digestion of components involved in signal transduction. *Pept. Chem.*, 33rd (1995, Pub. 1996) 73-76; *C.A.*, 125 (1996) 29450g.
- 316 Katoh, T. and Morita, F.: Mapping myosin-binding sites on actin probed by peptides that inhibit actomyosin interaction. *J. Biochem. (Tokyo)*, 120 (1996) 580-586.
- 317 Kellner, R.: Fragmentation of proteins within a polyacrylamide matrix. *Biochemica*, No. 2 (1995) 19-21; *C.A.*, 125 (1996) 109448c.
- 318 Ling, L., Templeton, D. and Kung, H.: Identification of the major autophosphorylation sites of Nyk/Mer, an NCAM-related receptor tyrosine kinase. *J. Biol. Chem.*, 271 (1996) 18355-18362.
- 319 Nakasone, K., Kato, C. and Horikoshi, K.: Molecular cloning of the gene encoding RNA polymerase α subunit from deep-sea barophilic bacterium. *Biochim. Biophys. Acta*, 1308 (1996) 107-110.
- 320 Nakayama, H., Yamaki, S., Shinkai, F., Kaji, H., Isobe, T., Seta, K. and Okuyama, T.: (Ultra-microanalysis of primary structure of proteins by a 2-dimensional electrophoresis-mass spectrometric system). *Kuromatogurafi*, 17 (1996) 164-165; *C.A.*, 125 (1996) 81208y.

- 321 Rachez, C., Sautiere, P., Formstecher, P. and Lefebvre, P.: Identification of amino acids critical for the DNA binding and dimerization properties of the human retinoic acid receptor α . Importance of lysine 360, lysine 365, and valine 361. *J. Biol. Chem.*, 271 (1996) 17996-18006.
- 322 Ramalho-Santos, M., Verissimo, P., Faro, C. and Pires, E.: Action on bovine α ₁-casein of cardosins A and B, aspartic proteinases from the flowers of the cardoon *Cynara cardunculus* L. *Biochim. Biophys. Acta*, 1297 (1996) 83-89.
- 323 Rickard, E.C. and Towns, J.K.: Applications of capillary zone electrophoresis to peptide mapping. *Methods Enzymol.*, 271(High Resolution Separation and Analysis of Biological Macromolecules) (1996) 237-264; C.A., 125 (1996) 215969h - a review with 49 refs.
- 324 Shoshan-Barmatz, V., Orr, I., Weil, S., Meyer, H., Varsanyi, M. and Heilmeyer, L.M.G.: The identification of the phosphorylated 150/160-kDa proteins of sarcoplasmic reticulum, their kinase and their association with the ryanodine receptor. *Biochim. Biophys. Acta*, 1283 (1996) 89-100.
- 325 Winkler, M.A., Kundu, S., Robey, T.E. and Robey, W.G.: Comparative peptide mapping of a hepatitis C viral recombinant protein by capillary electrophoresis and matrix-assisted laser desorption time-of-flight mass spectrometry. *J. Chromatogr. A*, 744 (1996) 177-185.
- 326 Wu, J.-T., Qian, M.G., Li, M.X., Liu, L. and Lubman, D.M.: Use of an ion trap storage/reflectron time-of-flight mass spectrometer as a rapid and sensitive detector for capillary electrophoresis in protein digest analysis. *Anal. Chem.*, 68 (1996) 3388-3396.
- See also 67, 342, 449, 472, 477, 482, 507, 609.
19. PROTEINS
- 19a. General techniques
- 327 Asaga, H.: (Modifications of O'Farrell's two-dimensional electrophoresis of proteins for the reduction of artifactual bands and streaks). *Commun. Appl. Cell Biol.*, 13 (1996) 15-22; C.A., 125 (1996) 216146z.
- 328 Castellanos-Serra, L.R., Fernandez-Patron, C., Hardy, E. and Huerta, V.: A procedure for protein elution from reverse-stained polyacrylamide gels applicable at the low picomole level: an alternative route to the preparation of low abundance proteins for microanalysis. *Electrophoresis (Weinheim)*, 17 (1996) 1564-1572.
- 329 Choi, J.-K., Na, D.-S., Hong, H.-Y., Choi, D.-K., Yoon, S.-H., Kwon, T.-I. and Yoo, G.-S.: A fast and sensitive Coomassie blue staining for proteins in polyacrylamide gels using ion-pairing agent. *Anal. Lett.*, 29 (1996) 1517-1525.
- 330 Cifuentes, A., Rodriguez, M.A. and Garcia-Montelongo, F.J.: Separation of basic proteins in free solution capillary electrophoresis: effect of additive, temperature and voltage. *J. Chromatogr. A*, 742 (1996) 257-266.
- 331 Clifton, M.J., Roux-de Balmann, H. and Sanchez, V.: Protein separation by continuous-flow electrophoresis in microgravity. *AIChE J.*, 42 (1996) 2069-2079; C.A., 125 (1996) 109453a.
- 332 Cottrell, J.S. and Sutton, C.W.: The identification of electrophoretically separated proteins by peptide mass fingerprinting. *Methods Mol. Biol. (Totowa)*, 61(Protein and Peptide Analysis by Mass Spectrometry) (1996) 67-82; C.A., 125 (1996) 269426x - a review with 28 refs.
- 333 Dunn, M.J.: Electroblotting of proteins from polyacrylamide gels. *Methods Mol. Biol. (Totowa)*, 59(Protein Purification Protocols) (1996) 363-370; C.A., 125 (1996) 29448n.
- 334 Dunn, M.J.: Electroelution of proteins from polyacrylamide gels. *Methods Mol. Biol. (Totowa)*, 59(Protein Purification Protocols) (1996) 357-362; C.A., 125 (1996) 29447m.
- 335 Ge, R. and Ding, Y.: (Analysis of specific water-soluble proteins by electrophoretic technique). *Lanzhou Daxue Xuebao Ziran Kexueban*, 32 (1996) 87-91; C.A., 125 (1996) 138613h.
- 336 Guttman, A.: Capillary sodium dodecyl sulfate-gel electrophoresis of proteins. *Electrophoresis (Weinheim)*, 17 (1996) 1333-1341 - a review with 51 refs.
- 337 Hamase, K. and Nakamura, H.: A simple method for high recovery of proteins after sodium dodecyl sulfate curdlan gel electrophoresis. *Anal. Sci.*, 12 (1996) 489-490; C.A., 125 (1996) 81055w.
- 338 Hengen, P.N.: Eliminating banding artifacts from SDS-PAGE. *Trends Biochem. Sci.*, 21 (1996) 191-193; C.A., 125 (1996) 29454m.
- 339 Hjerten, S.: Capillary electrophoretic separation in open and coated tubes with special reference to proteins. *Methods Enzymol.*, 270(High Resolution Separation and Analysis of Biological Macromolecules, Pt. A) (1996) 296-319; C.A., 125 (1996) 162583u.
- 340 Kostel, K.L.: Capillary electrophoresis of proteins and peptides. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 345-386; C.A., 125 (1996) 269415t - a review with many refs.
- 341 Legendre, B.L., Jr. and Soper, S.A.: Binding properties of near-IR dyes to proteins and separation of the dye/protein complexes using capillary electrophoresis with laser-induced fluorescence detection. *Appl. Spectrosc.*, 50 (1996) 1196-1202; C.A., 125 (1996) 269651s.
- 342 Liu, C.-S., Lin, C.-C., Chen, J.-M., Chang, C.-H. and Lo, T.-B.: A convenient amino acid analysis of proteins electroblotted onto polyvinylidene difluoride [PVDF] membrane from sodium dodecyl sulfate-polyacrylamide gel - a direct *in situ* derivatization of amino acids after gas-phase hydrolysis. *J. Chin. Biochem. Sci.*, 22 (1993) 69-76; C.A., 125 (1996) 29462n.
- 343 Liu, Y., Gu, J. and Fu, R.: Capillary zone electrophoretic separation of proteins in polymer coated capillaries. *J. Beijing Inst. Technol.*, 4 (1995) 148-155; C.A., 125 (1996) 29457q.
- 344 Liu, Z., Huang, Z., Chong, J., Yang, H., Ding, F. and Yuan, N.: Continuous separation of proteins by multichannel flow electrophoresis. *Sep. Sci. Technol.*, 31 (1996) 1427-1442; C.A., 125 (1996) 81047v.
- 345 Manabe, T.: (Protein analysis by capillary electrophoresis. Present and future). *Seibutsu Butsuri Kagaku*, 40 (1996) 155-159; C.A., 125 (1996) 80842p - a review with 12 refs.
- 346 Myers, M., Veis, A., Sabsay, B. and Wheeler, A.P.: A method for enhancing the sensitivity and stability of stains-all for phosphoproteins separated in sodium dodecyl sulfate-polyacrylamide gels. *Anal. Biochem.*, 240 (1996) 300-302.

- 347 Nakatani, M., Shibukawa, A. and Nakagawa, T.: Separation mechanism of pullulan solution-filled capillary electrophoresis of sodium dodecyl sulfate-proteins. *Electrophoresis (Weinheim)*, 17 (1996) 1584-1586.
- 348 O'Connor, A.J., Pratt, H.R.C. and Stevens, G.W.: Electrophoretic mobilities of proteins and protein mixtures in porous membranes. *Chem. Eng. Sci.*, 51 (1996) 3459-3477; *C.A.*, 125 (1996) 52818s.
- 349 Oda, R.P. and Landers, J.P.: Application of capillary electrophoresis to the analysis of proteins. *Bioseparation*, 5 (1995) 315-328; *C.A.*, 125 (1996) 109129z - a review with many refs.
- 350 Ren, J., Deng, Y. and Cheng, J.: (Capillary zone electrophoresis separation of basic proteins using arginine and lysine as buffer additives). *Gaodeng Xuexiao Huaxue Xuebao*, 17 (1996) 1059-1061; *C.A.*, 125 (1996) 109458f.
- 351 Rill, R.L., Locke, B.R., Liu, Y., Dharia, J. and van Winkle, D.: Protein electrophoresis in polyacrylamide gels with templated pores. *Electrophoresis (Weinheim)*, 17 (1996) 1304-1312.
- 352 Saitoh, T., Fukuda, T., Tani, H., Kamidate, T. and Watanabe, H.: Equilibrium study on interactions between proteins and bile-salt micelles by micellar electrokinetic chromatography. *Anal. Sci.*, 12 (1996) 569-573; *C.A.*, 125 (1996) 161526r.
- 353 Schaeffer, H.: (Electrophoresis techniques for native and denatured proteins). *BIOspektrum*, 2 (1996) 50-53; *C.A.*, 125 (1996) 109136z - a review with 13 refs.
- 354 Schepky, A.G., Meinhardt, G., Austermann, S., Adermann, K., Schulz-Knappe, P., Forssmann, W.-G. and Hass, R.: Specific determination of tyrosine-phosphorylated proteins and peptides by differential iodination. *J. Chromatogr. A*, 743 (1996) 273-282.
- 355 Steinberg, T.H., Haugland, R.P. and Singer, V.L.: Application of SYPRO Orange and SYPRO Red protein gel stains. *Anal. Biochem.*, 239 (1996) 238-245.
- 356 Steinberg, T.H., Jones, L.J., Haugland, R.P. and Singer, V.L.: SYPRO Orange and SYPRO Red protein gel stains: one-step fluorescent staining of denaturing gels for detection of nanogram levels of protein. *Anal. Biochem.*, 239 (1996) 223-237.
- 357 Stoyanov, A.V. and Righetti, P.G.: Dynamics of protein isoelectric focusing in immobilized pH gradient gels. *Electrophoresis (Weinheim)*, 17 (1996) 1313-1318.
- 358 Sutherland, J.C., Fisk, D.J., Monteleone, D.C. and Trunk, J.G.: A comparison of electrophoretic resolution for snapshot and finish-line imaging. *Anal. Biochem.*, 239 (1996) 136-144.
- 359 Touzet, P., de Vienne, D., Huet, J.-C., Ouali, C., Bouet, F. and Zivy, M.: Amino acid analysis of proteins separated by two-dimensional electrophoresis in maize: isoform detection and function identification. *Electrophoresis (Weinheim)*, 17 (1996) 1393-1401.
- 360 Tsukagoshi, K., Tanaka, A., Nakajima, R. and Hara, T.: Online capillary zone electrophoretic separation-chemiluminescence detection of protein labeled with fluorescamine. *Anal. Sci.*, 12 (1996) 525-528; *C.A.*, 125 (1996) 81182k.
- 361 Valaskovic, G.A., Kelleher, N.L. and McLafferty, F.W.: Attomole protein characterization by capillary electrophoresis-mass spectrometry. *Science (Washington)*, 273 (1996) 1199-1202; *C.A.*, 125 (1996) 162708p.
- 362 Vestling, M.M. and Fenselau, C.: Surfaces for interfacing protein gel electrophoresis directly with mass spectrometry. *Mass Spectrom. Rev.*, 14 (1995) 169-178; *C.A.*, 125 (1996) 80797c - a review with 65 refs.
- 363 Weiss, G.H., Sokoloff, H., Zakharov, S.F. and Chrambach, A.: Interpretation of electrophoretic band shapes by a partition chromatographic model. *Electrophoresis (Weinheim)*, 17 (1996) 1325-1332.
- 364 Wise, E.T., Singh, N. and Hogan, B.L.: Argon-laser-induced fluorescence detection in sodium dodecyl sulfate-capillary gel electrophoretic separations of proteins. *J. Chromatogr. A*, 746 (1996) 1090-121.
- 365 Wrigley, C.W., Margolis, J. and Manusu, H.P.: Large-scale preparative electrophoresis of proteins. *Am. Biotechnol. Lab.*, 14 (1996) 8-12; *C.A.*, 125 (1996) 136744c.
- See also 14, 26, 92, 131, 142, 178, 184, 215, 258, 315, 397, 450, 521, 713, 714.
- 19b. *Proteins of cells, viruses and subcellular particles*
- 366 Baumann, C.G., Malewicz, B., Anderson, W.H., Lampe, P.D., Johnson, R.G. and Baumann, W.J.: Lipid differentiation in MP26 junction enriched membranes of bovine lens fiber cells. *Biochim. Biophys. Acta*, 1303 (1996) 145-153.
- 367 Ben-Ze'ev, A.: The use of two-dimensional gel electrophoresis in studies on the role of cytoskeletal plaque proteins as tumor suppressors. *Electrophoresis (Weinheim)*, 17 (1996) 1752-1763.
- 368 Bindels, R.J.M., Engbersen, A.M.T., Hartog, A. and Blazer-Yost, B.L.: Aldosterone-induced proteins in primary cultures of rabbit renal cortical collecting system. *Biochim. Biophys. Acta*, 1284 (1996) 63-68.
- 369 Chiang, Y., Davis, R.G. and Vishwanatha, J.K.: Altered expression of annexin II in human B-cell lymphoma cell lines. *Biochim. Biophys. Acta*, 1313 (1996) 295-301.
- 370 Chrusciel, J., Blonski, J., Krykowski, E., Mirowski, M., Hanausek, M. and Kilianska, Z.M.: Characterization of proteins from chronic lymphocytic leukemic cells: electrophoretic and immunological approach. *Cytobios*, 85 (1996) 39-49; *C.A.*, 125 (1996) 269756e.
- 371 Garbuglia, M., Verzini, M., Dimlich, R.V.W., Jamieson, G.A., Jr. and Donato, R.: Characterization of type III intermediate filament regulatory protein target epitopes: S-100 (β and/or α) binds the N-terminal head domain; annexin II₂-p11₂ binds the rod domain. *Biochim. Biophys. Acta*, 1313 (1996) 268-276.
- 372 Gromov, P.S., Madsen, P. and Celis, J.E.: Identification of isoprenyl modified proteins metabolically labeled with [³H]farnesyl- and [³H]geranylgeranyl-pyrophosphate. *Electrophoresis (Weinheim)*, 17 (1996) 1728-1733.
- 373 Hamdan, M., Curcuruto, O., Vignano, S. and Rovero, P.: Investigation of newly synthesized peptides by capillary zone electrophoresis/electrospray mass spectrometry. *Rapid Commun. Mass Spectrom.*, 10 (1996) 1128-1132; *C.A.*, 125 (1996) 115129r.
- 374 Huber, L.A., Pasquali, C., Gagescu, R., Zuk, A., Gruenberg, J. and Matlin, K.S.: Endosomal fractions from viral K-ras-transformed MDCK cells reveal transformation specific changes on two-dimensional gel maps. *Electrophoresis (Weinheim)*, 17 (1996) 1734-1740.
- 375 Hynes, G., Celis, J.E., Lewis, V.A., Carne, A., U, S., Lauridsen, J.B. and Willison, K.R.: Analysis of chaperonin-containing TCP-1 subunits in the human keratinocyte two-dimensional protein database: further characterisation of antibodies to individual subunits. *Electrophoresis (Weinheim)*, 17 (1996) 1720-1727.

- 376 Jost, M. and Gerke, V.: Mapping of a regulatory important site for protein kinase C phosphorylation in the N-terminal domain of annexin II. *Biochim. Biophys. Acta*, 1313 (1996) 283-289.
- 377 Makifuchi, S., Takeuchi, M., Kawahire, S., Odani, S., Ichimura, T., Omata, S. and Horigome, T.: Characterization of p92, karyopherin β , co-purified with N-acetylglucosamine-bearing nucleoporins from rat liver nuclear envelopes. *J. Biochem. (Tokyo)*, 120 (1996) 716-724.
- 378 Marshansky, V. and Vinay, P.: Proton gradient formation in early endosomes from proximal tubules. *Biochim. Biophys. Acta*, 1284 (1996) 171-180.
- 379 McAtee, C.P., Zhang, Y., Yarbough, P.O., Fuerst, T.R., Stone, K.L., Samander, S. and Williams, K.R.: Purification and characterization of a recombinant hepatitis E protein vaccine candidate by liquid chromatography-mass spectrometry. *J. Chromatogr. B*, 685 (1996) 91-104.
- 380 Merrick, B.A., He, C., Witcher, L.L., Patterson, R.M., Reid, J.A., Pence-Pawlowski, P.M. and Selkirk, J.K.: HSP Binding and mitochondrial localization of p53 protein in human HT1080 and mouse C3H10T1/2 cell lines. *Biochim. Biophys. Acta*, 1297 (1996) 57-68.
- 381 Naasani, I., Kikuchi, T., Sugawara, M., Kobayashi, M., Iseki, K. and Miyazaki, K.: Solubilization and reconstitution characteristics of the carrier protein(s) responsible for the transport of ceftibuten, a substrate for the oligopeptide transporters, in rat renal brush-border membrane. *Biochim. Biophys. Acta*, 1283 (1996) 185-191.
- 382 Ohlendieck, K.: Characterisation of the dystrophin-related protein utrophin in highly purified skeletal muscle sarcolemma vesicles. *Biochim. Biophys. Acta*, 1283 (1996) 215-222.
- 383 Ojima, N., Sakamoto, T. and Yamashita, M.: (Two-dimensional polyacrylamide gel electrophoresis of intracellular proteins). *Chuo Suisan Kenkyusho Kenkyu Hokoku*, 8 (1996) 93-109; *C.A.*, 125 (1996) 109187s - a review with 17 refs.
- 384 Pushkina, M., Vasilescu, S., Fierro-Monti, I., Rohde, M. and McCarthy, J.E.G.: Intracellular targeting and mRNA interactions of the eukaryotic translation initiation factor eIF4E in the yeast *Saccharomyces cerevisiae*. *Biochim. Biophys. Acta*, 1308 (1996) 142-150.
- 385 Ronnov-Jensen, L. and Petersen, O.W.: ADP-Ribosylation of actins in fibroblasts and myofibroblasts by botulinum C2 toxin: influence on microfilament morphology and migratory behavior. *Electrophoresis (Weinheim)*, 17 (1996) 1776-1780.
- 386 Sasaki, J.-i., Yamaguchi, M., Saeki, S., Yamane, H., Okamura, N. and Ishibashi, S.: Sphingosine inhibition of NADPH oxidase activation in a cell-free system. *J. Biochem. (Tokyo)*, 120 (1996) 705-709.
- 387 Selkirk, J.K., He, C., Patterson, R.M. and Merrick, B.A.: Tumor suppressor p53 gene forms multiple isoforms: evidence for single locus origin and cytoplasmic complex formation with heat shock proteins. *Electrophoresis (Weinheim)*, 17 (1996) 1764-1771.
- 388 Takada, K., Hibi, N., Tsukada, Y., Shibasaki, T. and Ohkawa, K.: Ability of ubiquitin radioimmunoassay to discriminate between monoubiquitin and multi-ubiquitin chains. *Biochim. Biophys. Acta*, 1290 (1996) 282-288.
- 389 Umar, S., Malavasi, F. and Mehta, K.: Post-translational modification of CD38 protein into a high molecular weight form alters its catalytic properties. *J. Biol. Chem.*, 271 (1996) 15922-15927.
- See also 232, 324, 394, 395, 404, 445, 466, 498, 562, 565, 610, 655.
- 19c. *Proteins synthesized by genetic manipulation, monoclonal antibodies*
- 390 Arakawa, F., Kuroki, M., Kuwahara, M., Senba, T., Ozaki, H., Matsuoka, Y., Misumi, Y., Kanda, H. and Watanabe, T.: Cloning and sequencing of the V_H and V_κ genes of an anti-CD3 monoclonal antibody, and construction of a mouse/human chimeric antibody. *J. Biochem. (Tokyo)*, 120 (1996) 657-662.
- 391 Asayama, M., Suzuki, H., Sato, A., Aida, T., Tanaka, K., Takahashi, H. and Shirai, M.: The rpoD1 gene product is a principal sigma factor of RNA polymerase in *Microcystis aeruginosa* K-81. *J. Biochem. (Tokyo)*, 120 (1996) 752-758.
- 392 Bullido, M.J., Muñoz-Fernandez, M.A., Recuero, M., Fresno, M. and Valdivieso, F.: Alzheimer's amyloid precursor protein is expressed on the surface of hematopoietic cells upon activation. *Biochim. Biophys. Acta*, 1313 (1996) 54-62.
- 393 Caldwell, J.S., Moyers, J.S., Doria, A., Reynet, C. and Kahn, R.C.: Molecular cloning of the human rad gene: gene structure and complete nucleotide sequence. *Biochim. Biophys. Acta*, 1316 (1996) 145-148.
- 394 Flamminio, G., Monti, E., Gargiulo, F., Varinacci, C., Magni, P., Martinelli, F., Caimi, L., Caruso, A., Preti, A. and Turano, A.: Purification of recombinant LamB proteins using continuous elution electrophoresis: a comparison with immunoaffinity chromatography. *Biochem. Mol. Biol. Int.*, 36 (1995) 1255-1261; *C.A.*, 125 (1996) 52804j.
- 395 Gilbert, M., Ostiguy, S., Kluepfel, D. and Morosoli, R.: Cloning of a secA homolog from *Streptomyces lividans* 1326 and over-expression in both *S. lividans* and *Escherichia coli*. *Biochim. Biophys. Acta*, 1296 (1996) 9-12.
- 396 Kawachi, H., Atomi, H., Ueda, M., Hashimoto, N., Kobayashi, K., Yoshida, T., Kamasawa, N., Osumi, M. and Tanaka, A.: Individual expression of *Candida tropicalis* peroxisomal and mitochondrial carnitine acetyltransferase-encoding genes and subcellular localization of the products in *Saccharomyces cerevisiae*. *J. Biochem. (Tokyo)*, 120 (1996) 731-735.
- 397 Leffers, H., Dejgaard, K., Honoré, B., Madsen, P., Nielsen, M.S. and Celis, J.E.: cDNA expression and human two-dimensional gel protein databases: towards integrating DNA and protein information. *Electrophoresis (Weinheim)*, 17 (1996) 1713-1719.
- 398 Pawelek, P.D. and MacKenzie, R.E.: Methylenetetrahydrofolate dehydrogenase-cyclohydrolase from *Photobacterium phosphoreum* shares properties with a mammalian mitochondrial homologue. *Biochim. Biophys. Acta*, 1296 (1996) 47-54.
- 399 Sasaki, T., Yamada, H., Matsui, H., Dohi, Y., Hirakawa, Y., Sakanashi, T. and Yonemasu, K.: Effects of transfer of hybridomas producing various isotypes of immunoglobulins on the C1q metabolism in mice. *J. Biochem. (Tokyo)*, 120 (1996) 306-312.
- 400 Schlosser, U., Lackner, K.J., Scheckenhofer, C. and Schmitz, G.: Calpastatin autoantibodies: detection, epitope mapping, and development of a specific peptide ELISA. *Clin. Chem. (Washington)*, 42 (1996) 1250-1256.
- 401 Shaw, A.L., Hanson, G.R. and McEwan, A.G.: Cloning and sequence analysis of the dimethylsulfoxide reductase structural gene from *Rhodobacter capsulatus*. *Biochim. Biophys. Acta*, 1276 (1996) 176-180.

- 402 Sugiura, M., Sakaki, T., Yabusaki, Y. and Ohkawa, H.: Cloning and expression in *Escherichia coli* and *Saccharomyces cerevisiae* of a novel tobacco cytochrome P-450-like cDNA. *Biochim. Biophys. Acta*, 1308 (1996) 231-240.
- 403 Teshima, G. and Wu, S.-L.: Capillary electrophoresis analysis of recombinant proteins. *Methods Enzymol.*, 271(High Resolution Separation and Analysis of Biological Macromolecules) (1996) 264-293; C.A., 125 (1996) 215970b - a review with 41 refs.
- 404 Thain, A., Gaston, K., Jenkins, O. and Clarke, A.R.: A method for the separation of GST fusion proteins from co-purifying GroEL. *Trends Genet.*, 12 (1996) 209-210; C.A., 125 (1996) 81050r.
- See also 217, 230, 298, 303, 325, 376, 435, 449, 469, 501, 511, 515, 516, 519, 523, 525, 542, 614, 640, 657, 680.
- 19d. *Microbial and plant proteins*
- 405 Boucherie, H., Saggiocco, F., Joubert, R., Maillet, I., Labarre, J. and Perrot, M.: Two-dimensional gel protein database of *Saccharomyces cerevisiae*. *Electrophoresis (Weinheim)*, 17 (1996) 1683-1699.
- 406 Cifuentes, A., de Frutos, M. and Diez-Mass, J.C.: Polymeric networks vs. cross-linked polyacrylamide bonded gels for CE separations of whey proteins. *Am. Lab. (Shelton)*, 26 (1994) 46-51; C.A., 125 (1996) 109454b.
- 407 Finn, B. and Rowe, M.: A taxonomic study of the genus *Listeria* using sodium dodecyl sulphate-polyacrylamide gel electrophoresis of intracellular proteins. *Electrophoresis (Weinheim)*, 17 (1996) 1633-1637.
- 408 Flint, S.H. and Kells, N.J.: The sub-typing of *Listeria monocytogenes* isolates from food, environments surrounding food manufacturing sites, and clinical samples in New Zealand using multilocus enzyme electrophoresis. *Int. J. Food Microbiol.*, 31 (1996) 349-355; C.A., 125 (1996) 269672z.
- 409 Gorinstein, S., Paccola-Meirelles, L.D., Belo, V.A. and Azevedo, J.L.: Characterization of *Beauveria bassiana*, *Metarhizium anisopliae* and *Aspergillus nidulans* through electrophoretic patterns of their protein fractions. *J. Ferment. Bioeng.*, 82 (1996) 89-92; C.A., 125 (1996) 216525x.
- 410 Hibino, T., Lee, B.H., Yajima, T., Odani, A., Yamauchi, O. and Takabe, T.: Kinetic and cross-linking studies on the interactions of negative patch mutant plastocyanin from *Silene pratensis* with photosystem I complexes from cyanobacteria, green algae, and plants. *J. Biochem. (Tokyo)*, 120 (1996) 556-563.
- 411 Hinode, D., Grenier, D. and Mayrand, D.: A general procedure for the isolation of heat-shock proteins from periodontopathogenic bacteria. *J. Microbiol. Methods*, 25 (1996) 349-355; C.A., 125 (1996) 189903k.
- 412 Ishimizu, T., Sato, Y., Saito, T., Yoshimura, Y., Norioka, S., Nakanishi, T. and Sakiyama, F.: Identification and partial amino acid sequences of seven S-RNases associated with self-incompatibility of Japanese pear, *Pyrus pyrofolia* Nakai. *J. Biochem. (Tokyo)*, 120 (1996) 326-334.
- 413 Iteman, I., Guiyoule, A. and Carniel, E.: Comparison of three molecular methods for typing and subtyping pathogenic *Yersinia enterocolitica* strains. *J. Med. Microbiol.*, 45 (1996) 48-56; C.A., 125 (1996) 189909s.
- 414 Le Grange, E.W. and de Villiers, O.T.: Extraction and electrophoretic separation of proteins from leaves of scions and rootstocks of *Vitis* cultivars. *S. Afr. J. Plant Soil*, 13 (1996) 42-46; C.A., 125 (1996) 52953g.
- 415 Mason, A.B., Kardos, T.B., Perlin, D.S. and Monk, B.C.: Functional complementation between transmembrane loops of *Saccharomyces cerevisiae* and *Candida albicans* plasma membrane H⁺-ATPases. *Biochim. Biophys. Acta*, 1284 (1996) 181-190.
- 416 Mellenthin, O. and Galensa, R.: (Detection of soy in meat products by using capillary zone electrophoresis and photodiode array detection). *Dtsch. Lebensmittel-Rundsch.*, 92 (1996) 171-175; C.A., 125 (1996) 193909j.
- 417 Muñoz-Centeno, M.C., Ruiz, M.T., Paneque, A. and Cejudo, F.J.: Posttranslational regulation of nitrogenase activity by fixed nitrogen in *Azotobacter chroococcum*. *Biochim. Biophys. Acta*, 1291 (1996) 67-74.
- 418 Quandroni, M., Staudemann, W., Kertesz, M. and James, P.: Analysis of global responses by protein and peptide fingerprinting of proteins isolated by two-dimensional gel electrophoresis. Application to the sulfate-starvation response of *Escherichia coli*. *Eur. J. Biochem.*, 239 (1996) 773-781.
- 419 Sadowska-Rybak, M., Buettner, C. and Landsiedel, B.: Comparative studies for the detection of *Agrobacterium tumefaciens* by polymerase chain reaction, serological methods, SDS-PAGE and selective media. *Arch. Phytopathol. Plant Prot.*, 30 (1995) 31-40; C.A., 125 (1996) 242331a.
- 420 Sammour, R.H., El-Shourbagy, M.N., Abo-Shady, A.M. and Abasary, A.M.: Characterization of sunflower seed proteins by electrophoretic techniques. *Arab Gulf J. Sci. Res.*, 13 (1995) 591-604; C.A., 125 (1996) 220101y.
- 421 Sharples, F.P., Wrench, P.M., Ou, K. and Hiller, R.G.: Two distinct forms of the peridinin-chlorophyll *a*-protein from *Amphidinium carterae*. *Biochim. Biophys. Acta*, 1276 (1996) 117-123.
- 422 Shimoni, Y. and Galili, G.: Intramolecular disulfide bonds between conserved cysteines in wheat gliadins control their deposition into protein bodies. *J. Biol. Chem.*, 271 (1996) 188869-18874.
- 423 Yeh, L.-C.C., Deshmukh, M., Woolford, J.L. and Lee, J.C.: Involvement of lysine 270 and lysine 271 of yeast 5S rRNA binding protein in RNA binding and ribosome assembly. *Biochim. Biophys. Acta*, 1308 (1996) 133-141.
- 424 Yunuskhonov, S., Ibragimov, A.P. and Abdurakhimova, N.: (Comparative study of electrophoretic spectra of the water-soluble protein fraction in seeds of some cotton species and hybrids). *Dokl. Akad. Nauk Resp. Uzb.*, (1995) 50-52; C.A., 125 (1996) 243154g.
- 425 Zhao, X.C. and Sharp, P.J.: An improved 1-D SDS-PAGE method for the identification of three bread wheat "waxy" proteins. *J. Cereal Sci.*, 23 (1996) 191-193; C.A., 125 (1996) 29445j.
- 426 Zolla, L., Bianchetti, M., Timperio, A.M., Mugnozza, G.S. and Corradini, D.: Capillary electrophoresis of closely related intrinsic thylakoid membrane proteins of the photosystem II light-harvesting complex (LHC II). *Electrophoresis (Weinheim)*, 17 (1996) 1597-1601.
- See also 365.

19e. *Proteins of blood, serum and blood cells*

- 427 Bjorklund, M. and Hearn, M.T.W.: Characterisation of silica-based heparin-affinity adsorbents through column chromatography of plasma fractions containing thrombin. *J. Chromatogr. A*, 743 (1996) 145-162.
- 428 Bruun, C.F., Sletten, K., Mehlum, A. and Marhaug, G.: Isolation of serum amyloid A protein by small-scale hydrophobic interaction chromatography and two-dimensional electrophoresis. *J. Chromatogr. B*, 685 (1996) 360-363.
- 429 Busch, M.H.A., Boelens, H.F.M., Kraak, J.C., Poppe, H., Meekel, A.A.P. and Resmini, M.: Critical evaluation of the applicability of capillary zone electrophoresis for the study of hapten-antibody complex formation. *J. Chromatogr. A*, 744 (1996) 195-203.
- 430 Clark, R., Katzmann, J.A., Wiegert, E., Namyst-Goldberg, C., Sanders, L., Oda, R.P., Kyle, R.A. and Landers, J.P.: Rapid capillary electrophoretic analysis of human serum proteins: qualitative comparison with high-throughput agarose gel electrophoresis. *J. Chromatogr. A*, 744 (1996) 205-213.
- 431 Dalençon, F., Rosillo, V., Puisieux, F., Baszkin, A. and Wautier, J.-L.: Liposomes bearing platelet proteins: a model for surface functions studies. *Biochim. Biophys. Acta*, 1302 (1996) 241-248.
- 432 Fukui, E., Kojima, M., Yoshizawa, M., Muramatsu, S., Yoshikawa, T. and Tanji, T.: Genetic polymorphism of electrophoretic type of serum proteins and red cell enzymes in Japanese sika deer. *Anim. Sci. Technol.*, 67 (1996) 574-578; *C.A.*, 125 (1996) 191390j.
- 433 Heegaard, N.H.H., Olsen, D.T. and Larsen, K.-L.P.: Immuno-capillary electrophoresis for the characterization of a monoclonal antibody against DNA. *J. Chromatogr. A*, 744 (1996) 285-294.
- 434 Hikawa, A., Nomata, Y., Suzuki, T., Ozasa, H. and Yamada, O.: Soluble transferrin receptor-transferrin complex in serum: measurement by latex agglutination nephelometric immunoassay. *Clin. Chim. Acta*, 254 (1996) 159-172.
- 435 Hunt, G., Moorhouse, K.G. and Chen, A.B.: Capillary isoelectric focusing and sodium dodecyl sulfate-capillary gel electrophoresis of recombinant humanized monoclonal antibody HER2. *J. Chromatogr. A*, 744 (1996) 295-301.
- 436 Ishioka, N. and Kurosu, Y.: (Chemical diagnosis of human serum proteins using capillary electrophoresis - a new clinical approach). *Kuromatogurafi*, 17 (1996) 7-18; *C.A.*, 125 (1996) 52535x - a review with 33 refs.
- 437 Jordán, J.A., DeLoach, J.R., Luque, J. and Díez, J.C.: Targeting of mouse erythrocytes by band 3 crosslinkers. *Biochim. Biophys. Acta*, 1291 (1996) 27-34.
- 438 Kubo, K.: Rapid electrophoretic analysis of heterogeneity of bovine serum albumin using a linear polyacrylamide-coated capillary. *Anal. Biochem.*, 241 (1996) 42-46.
- 439 Malsch, R., Mrotzek, T., Huhle, G. and Harenberg, J.: Purification of the monoclonal heparin antibody H-1.18. *J. Chromatogr. A*, 744 (1996) 215-221.
- 440 Mashiko, H., Kato, K., Fujii, K.-i. and Takahashi, H.: Studies on factor XII in porcine plasma: purification and its conversion to activated form by porcine plasma kallikrein. *Biochim. Biophys. Acta*, 1296 (1996) 198-206.
- 441 McCarthy, E., Vella, G., Mhatre, R. and Lim, Y.-P.: Rapid purification and monitoring of immunoglobulin M from ascites by perfusion ion-exchange chromatography. *J. Chromatogr. A*, 743 (1996) 163-170.
- 442 Moulton, D.P., Morris, A., Vasudevan, G., Chiu, F. and McDonald, M.J.: Carboxy-terminal modification influences assembly of sickle hemoglobin β chains. *Biochem. Biophys. Res. Commun.*, 226 (1996) 309-313.
- 443 Ogata, M., Taga, H. and Taketa, K.: Lectin affinity electrophoresis of α -fetoprotein detected by immuno-enzymic and chemiluminescent amplification followed by direct scanning. *Acta Med. Okayama*, 50 (1996) 119-124; *C.A.*, 125 (1996) 137169f.
- 444 Qian, M.G., Wu, J.-T., Paraus, S. and Lubman, D.M.: The development of a data system for a combination of liquid chromatography or capillary electrophoresis with an ion trap storage/reflectron time-of-flight mass detector. *Rapid Commun. Mass Spectrom.*, 10 (1996) 1209-1214; *C.A.*, 125 (1996) 162688g.
- 445 Schwarzer, E. and Arese, P.: Phagocytosis of malarial pigment hemozoin inhibits NADPH-oxidase activity in human monocyte-derived macrophages. *Biochim. Biophys. Acta*, 1316 (1996) 169-175.
- 446 Shihabi, Z.K.: Analysis and general classification of serum cryoglobulins by capillary zone electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1607-1612.
- 447 Somos, S.: Alloalbuminaemia as a curious laboratory finding. *Clin. Chim. Acta*, 254 (1996) 73-76.
- 448 Sun, S. and Zhang, B.: (Application of capillary electrophoresis to clinical diagnosis). *Sepu*, 14 (1996) 373-376; *C.A.*, 125 (1996) 269680a.
- 449 Tyutyulkova, S., Gao, Q.-S., Thompson, A., Rennard, S. and Paul, S.: Efficient vasoactive intestinal polypeptide hydrolyzing autoantibody light chains selected by phage display. *Biochim. Biophys. Acta*, 1316 (1996) 217-223.
- 450 Wijnen, P.A.H.M. and Dieijen-Visser, M.P.: Capillary electrophoresis of serum proteins. *Eur. J. Clin. Chem. Clin. Biochem.*, 34 (1996) 535-545.
- 451 Yonekawa, O.: (Analysis of serum proteins by electrophoresis). *Kensa to Gijutsu*, 24 (1996) 415-426; *C.A.*, 125 (1996) 109140w - a review with 6 refs.

See also 226, 390, 399, 475, 507, 893.

19f. *Structural and muscle proteins*

- 452 De Jongh, K.S., Murphy, B.J., Colvin, A.A., Hell, J.W., Takahashi, M. and Catterall, W.A.: Specific phosphorylation of a site in the full-length form of the $\alpha 1$ subunit of the cardiac L-type calcium channel by adenosine 3',5'-cyclic monophosphate-dependent protein kinase. *Biochemistry*, 35 (1996) 10392-10402.
- 453 Esteve-Romero, J.S., Malmheden Yamn, I., Bossi, A. and Righetti, P.G.: Fish species identification by isoelectric focusing of parvalbumins in immobilized pH gradients. *Electrophoresis (Weinheim)*, 17 (1996) 1380-1385.
- 454 Liao, J., Ku, N.-O. and Omary, M.B.: Two-dimensional gel analysis of glandular keratin intermediate filament phosphorylation. *Electrophoresis (Weinheim)*, 17 (1996) 1671-1676 - a review with 67 refs.

- 455 Müller, E.-C., Thiede, B., Zimny-Arndt, U., Scheler, C., Prehm, J., Müller-Werdan, U., Wittmann-Liebold, B., Otto, A. and Jungblut, P.: High-performance human myocardial two-dimensional electrophoresis database: Edition 1996. *Electrophoresis (Weinheim)*, 17 (1996) 1700-1712.
- 456 Otto, A., Thiede, B., Müller, E.-C., Scheler, C., Wittmann-Liebold, B. and Jungblut, P.: Identification of human myocardial proteins separated by two-dimensional electrophoresis using an effective sample preparation for mass spectrometry. *Electrophoresis (Weinheim)*, 17 (1996) 1643-1650.
- 457 Pleissner, K.-P., Sander, S., Oswald, H., Regitz-Zagrosek, V. and Fleck, E.: The construction of the World Wide Web-accessible myocardial two-dimensional gel electrophoresis protein database "HEART-2DPAGE": a practical approach. *Electrophoresis (Weinheim)*, 17 (1996) 1386-1392.
- 458 Sutton, C.W., Pemberton, K.S., Cottrell, J.S., Corbett, J.M., Wheeler, C.H., Dunn, M.J. and Pappin, D.J.: Identification of myocardial proteins from two-dimensional gels by database matching of proteolytic peptide masses. In: Geisow, M.J. and Epton, R. (Editors), *Perspect. Protein Eng. Complementary Technol., Collect. Pap., Int. Symp., 3rd 1994*, Mayflower Worldwide, Kingswinford, 1995, pp. 82-85; C.A., 125 (1996) 109439a.
- 459 Wu, X., Li, W. and Zhao, W.: (Determination of keratin composition of discolored human hair by two-dimensional polyacrylamide gel electrophoresis). *Fenxi Ceshi Xuebao*, 15 (1996) 33-36; C.A., 125 (1996) 123203a.
- 460 Zhang, Y., Lee, H.K. and Li, S.F.Y.: Separation of myoglobin molecular mass markers using non-gel sieving capillary electrophoresis. *J. Chromatogr. A*, 744 (1996) 249-257.
- See also 316, 382, 385, 721.
- 19g. *Protamines, histones and other nuclear proteins*
- 461 Díaz-Jullien, C., Pérez-Estévez, A., Covelo, G. and Freire, M.: Prothymosin α binds histones *in vitro* and shows activity in nucleosome assembly assay. *Biochim. Biophys. Acta*, 1296 (1996) 219-227.
- 462 Dunnen, J.T.D., Liang, P., van Ommen, G.J.B. and van Broeckhoven, C.: Mutation detection and diagnosis using PFGE. In: Monaco, A.P. (Editor), *Pulsed Field Gel Electrophor.*, IRL Press, Oxford, 1995, pp. 45-67; C.A., 125 (1996) 52807n.
- 463 Lindner, H., Sarg, B., Meraner, C. and Helliger, W.: Separation of acetylated core histones by hydrophilic-interaction liquid chromatography. *J. Chromatogr. A*, 743 (1996) 137-144.
- See also 377.
- 19h. *Chromoproteins and metalloproteins*
- 464 Conti, M., Gelfi, C., Bosio, A.B. and Righetti, P.G.: Quantitation of glycosylated hemoglobins in human adult blood by capillary isoelectric focusing. *Electrophoresis (Weinheim)*, 17 (1996) 1590-1596.
- 465 Debernardi, S., de Bellis, G., Mosca, A., Paleari, R. and Luzzana, M.: Characterization of Hb Camperdown [β 104(G6)-Arg \rightarrow Ser] by capillary electrophoresis and automated solid phase DNA sequencing. *Hemoglobin*, 20 (1996) 155-160; C.A., 125 (1996) 83479m.
- 466 Hill, K.E., Chittum, H.S., Lyons, P.R., Boeglin, M.E. and Burk, R.F.: Effect of selenium on selenoprotein P expression in cultured liver cells. *Biochim. Biophys. Acta*, 1313 (1996) 29-34.
- 467 Hofstadler, S.A., Severs, J.C., Smith, R.D., Swaneck, F.D. and Ewing, A.G.: Analysis of single cells with capillary electrophoresis electrospray ionization Fourier transform ion cyclotron resonance mass spectrometry. *Rapid Commun. Mass Spectrom.*, 10 (1996) 919-922; C.A., 125 (1996) 109544f.
- 468 Homma-Takeda, S., Shinyashiki, M., Kumagai, Y. and Shimojo, N.: A new method for detection of mercury-bound protein with a combination of gel electrophoresis and one dimensional synchrotron radiation x-ray fluorescence analysis. *J. Occup. Health*, 38 (1996) 118-119; C.A., 125 (1996) 216287w.
- 469 Kuroda, R., Kinoshita, J.-y., Honsho, M., Mitoma, J.-y. and Ito, A.: *In situ* topology of cytochrome b_5 in the endoplasmic reticulum membrane. *J. Biochem. (Tokyo)*, 120 (1996) 828-833.
- 470 Kyriakopoulos, A., Hammel, C., Gessner, H. and Behne, D.: Characterization of an 18-kD selenium-containing protein in several tissues of the rat. *Am. Biotechnol. Lab.*, 14 (1996) 22; C.A., 125 (1996) 189806f.
- 471 Luo, D., Mah, N., Wishart, D., Zhang, Y., Jacobs, F. and Martin, L.: Construction and expression of bi-functional proteins of single-chain Fv with effector domains. *J. Biochem. (Tokyo)*, 120 (1996) 229-232.
- 472 Matsubara, K., Yamaki, M., Nagayama, K., Imai, K., Ishii, H., Gotoh, T. and Ebina, S.: Wheat germ agglutinin-reactive chains of giant hemoglobin from the polychaete *Perinereis aibuhitensis*. *Biochim. Biophys. Acta*, 1290 (1996) 215-223.
- 473 Minami, T., Matsubara, H., O'higashi, M., Kubo, K., Okabe, N. and Okazaki, Y.: Analysis of interaction between cadmium and metallothionein isoforms by capillary zone electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1602-1606.
- 474 Minami, T., Matsubara, H., O'higashi, M., Otaki, N., Kimura, M., Kubo, K., Okabe, N. and Okazaki, Y.: Identification of metallothionein isoforms with capillary zone electrophoresis using a polyacrylamide-coated tube. *J. Chromatogr. B*, 685 (1996) 353-359.
- 475 Okazaki, T., Yanagisawa, Y. and Nagai, T.: Determination of intermediates of hemoglobin-haptoglobin complex of haptoglobin polymers by "crossed hemoglobin electrophoresis". *Anal. Biochem.*, 239 (1996) 123-129.
- 476 Perron, M.-J., Emond, J.-P. and Lavigne, F.: (Method for diagnosis of cerebrospinal fistula by detection of β_2 -transferrin in otorrheal and rhinorrheal fluids). *Ann. Biochim. Clin. Que.*, 35 (1996) 27-32; C.A., 125 (1996) 216152y.
- 477 Tang, Q., Harrata, A.K. and Lee, C.S.: High-resolution capillary isoelectric focusing - electrospray ionization mass spectrometry for hemoglobin variants analysis. *Anal. Chem.*, 68 (1996) 2482-2487.
- 478 Tomita, S., Okuyama, E., Ohnishi, T. and Ichikawa, Y.: Characteristic properties of a retinoic acid synthetic cytochrome P-450 purified from liver microsomes of 3-methylcholanthrene-induced rats. *Biochim. Biophys. Acta*, 1290 (1996) 273-281.
- 479 Yuasa, H.J., Green, B.N., Takagi, T., Suzuki, N., Vinogradov, S.N. and Suzuki, T.: Electrospray ionization mass spectrometric composition of the 400 kDa hemoglobin from the pogonophoran *Oligobranchia mashikoi* and the primary structures of three major globin chains. *Biochim. Biophys. Acta*, 1296 (1996) 235-244.

See also 402.

19i. *Proteins of glands, gland products, various zymogens (incl. milk proteins)*

- 480 De Frutos, M., Molina, E. and Amigo, L.: Applicability of capillary electrophoresis to the study of bovine β -lactoglobulin polymorphism. *Milchwissenschaft*, 51 (1996) 374-378; C.A., 125 (1996) 193942q.
- 481 Erhardt, G.: Detection of a new κ -casein variant in milk of Pinzgauer cattle. *Anim. Genet.*, 27 (1996) 105-107; C.A., 125 (1996) 136970y.
- 482 Hirasawa, A., Athauda, S.B.P. and Takahashi, K.: Purification and characterization of turtle pepsinogen and pepsin. *J. Biochem. (Tokyo)*, 120 (1996) 407-414.

See also 322, 454, 466, 646.

19j. *Proteins of brain, cerebrospinal fluid and eye*

- 483 Charriaut-Marlangue, C., Dessi, F. and Ben-Ari, Y.: Use of two-dimensional gel electrophoresis to characterize protein synthesis during neuronal death in cerebellar culture. *Electrophoresis (Weinheim)*, 17 (1996) 1781-1786.
- 484 Dawson, M., Martin, T.C., Keyes, P. and Jones, V.: Spongiform encephalopathy detection methods. *PCT Int. Appl.* WO 96 17,250 (Cl. GO1N33/68), 6 Jun. 1996, GB Appl. 94/24,068, 29 Nov. 1994; 12 pp.; C.A., 125 (1996) 109661s.
- 485 Geschwind, D.H., Thormodsson, F.R. and Hockfield, S.: Changes in protein expression during neural development analyzed by two-dimensional gel electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1677-1682 - a review with 53 refs.
- 486 Kawamura, S., Kuwata, O., Yamada, M., Matsuda, S., Hisatomi, O. and Tokunaga, F.: Photoreceptor protein s26, a cone homologue of S-modulin in frog retina. *J. Biol. Chem.*, 271 (1996) 21359-21364.
- 487 Kostel, K.L., Freed, A.L. and Lunte, S.M.: Complete capillary electrophoretic separation of substance P and its metabolites at neutral pH using ionic run buffer additives. *J. Chromatogr. A*, 744 (1996) 241-248.
- 488 Willis, J.A. and Schleich, T.: Oxidative-stress induced protein glutathione mixed-disulfide formation in the ocular lens. *Biochim. Biophys. Acta*, 1313 (1996) 20-28.
- 489 Yazawa, I., Nukina, N. and Kanazawa, I.: Characterization of dentatorubral-pallidolusian atrophy proteins using two-dimensional electrophoretic analysis. *Brain Res.*, 732 (1996) 154-158; C.A., 125 (1996) 244685t.

See also 366, 392, 496.

19k. *Proteins of neoplastic tissue and transformed cells*

- 490 Epstein, L.B., Smith, D.M., Matsui, N.M., Tran, H.M., Sullivan, C., Raineri, I., Burlingame, A.L., Clauser, K.R., Hall, S.C. and Andrews, L.E.: Identification of cytokine-regulated proteins in normal and malignant cells by the combination of two-dimensional polyacrylamide gel electrophoresis, mass spectrometry, Edman degradation and immunoblotting and approaches to the analysis of their functional roles. *Electrophoresis (Weinheim)*, 17 (1996) 1655-1670. - a review with 75 refs.

- 491 Hagiya, Y., Fukao, H., Ueshima, S., Okada, K., Inufusa, H., Kamishi, H. and Matsuo, O.: Enhanced urokinase-type plasminogen activator activity by extracellular matrix protein obtained from highly metastatic human lung adenocarcinoma cell line. *Clin. Chim. Acta*, 253 (1996) 37-50.
- 492 Kondo, T., Mihara, K., Inoue, Y. and Namba, M.: Two-dimensional electrophoretic studies on down-regulated intracellular transferrin in human fibroblasts immortalized by treatment with either 4-nitroquinoline 1-oxide or ^{60}Co gamma rays. *Electrophoresis (Weinheim)*, 17 (1996) 1638-1642.
- 493 Kropveld, A., Slootweg, P.J., van Mansfeld, A.D.M., Blankenstein, M.A. and Hordijk, G.J.: Radioresistance and p53 status of T2 laryngeal carcinoma: analysis by immunohistochemistry and denaturing gradient gel electrophoresis. *Cancer (N.Y.)*, 78 (1996) 991-997; C.A., 125 (1996) 242245a.
- 494 Maxwell, S.A., Roth, J.A. and Mukhopadhyay, T.: Analysis of phosphorylated isoforms of the p53 tumor suppressor protein in human lung carcinoma cells undergoing apoptosis. *Electrophoresis (Weinheim)*, 17 (1996) 1772-1775.
- 495 Vogel, T., Dehmel, A., Otto, A., Fichtner, I., Kaisers, H. and Schlag, P.M.: (Detection of mamma-carcinoma-specific proteins from the serum of xenotransplanted nude mice by means of differential two-dimensional electrophoresis). *Chir. Forum Exp. Klin. Forsch.*, Suppl. 1 (1996) 537-542; C.A., 125 (1996) 139413e.
- 496 Wimmer, K., Kuick, R., Thoraval, D. and Hanash, S.M.: Two-dimensional separations of the genome and proteome of neuroblastoma cells. *Electrophoresis (Weinheim)*, 17 (1996) 1741-1751.
- 497 Yang, J., Chin, K. and Hait, W.N.: Interaction of P-glycoprotein with protein kinase C in human multidrug resistant carcinoma cells. *Cancer Res.*, 56 (1996) 3490-3494.

See also 229, 367, 717.

19l. *Specific binding and receptor proteins*

- 498 Amano, I., Ishikawa, Y., Eguchi, T. and Ishida, H.: Regulation of phosphorylation of Gi2 α protein controls the secretory response to isoproterenol in rat parotid tissues. *Biochim. Biophys. Acta*, 1313 (1996) 146-156.
- 499 Bianchi, R., Garbuglia, M., Verzini, M., Giambanco, I., Ivanenkov, V.V., Dimlich, R.V.W., Jamieson, G.A., Jr. and Donato, R.: S-100 (α and β) binding peptide (TRTK-12) blocks S-100/GFAP interaction: identification of a putative S-100 target epitope within the head domain of GFAP. *Biochim. Biophys. Acta*, 1313 (1996) 258-267.
- 500 Chronoes, Z.C., Abdolrasulnia, R., Whitsett, J.A., Rice, W.R. and Shepherd, V.L.: Purification of a cell-surface receptor for surfactant protein A. *J. Biol. Chem.*, 271 (1996) 16375-16383.
- 501 Ettner, N., Müller, G., Berens, C., Backes, H., Schnappinger, D., Schreppe, T., Pfeleiderer, K. and Hillen, W.: Fast large-scale purification of tetracycline repressor variants from overproducing *Escherichia coli* strains. *J. Chromatogr. A*, 742 (1996) 95-105.
- 502 Harumiya, S., Takeda, K., Sugiura, T., Fukumoto, Y., Tachikawa, H., Miyazono, K., Fujimoto, D. and Ichijo, H.: Characterization of ficolins as novel elastin-binding proteins and molecular cloning of human ficolin-1. *J. Biochem. (Tokyo)*, 120 (1996) 745-751.

- 503 Hofffelder, K., Wang, F. and Pan, Y.-C.E.: "Fishing out" ligand binding proteins from protein mixtures by a two-dimensional gel electrophoresis system utilizing native PAGE followed by SDS-PAGE. In: Marshak, D.R. (Editor), *Tech. Protein Chem. VII, [Symp. Protein Soc.], 9th 1995*, Academic, San Diego, 1996, pp. 75-80; *C.A.*, 125 (1996) 242183d.
- 504 Ibarrola, I., Andrés, M., Marino, A., Macarulla, J.M. and Trueba, M.: Purification of a cortisol binding protein from hepatic plasma membrane. *Biochim. Biophys. Acta*, 1284 (1996) 41-46.
- 505 Moutairou, K., Hayez, N., Pohl, V., Pattyn, G. and Pochet, R.: Calbindin localization in African giant rat kidney (*Cricetomys gambianus*). *Biochim. Biophys. Acta*, 1313 (1996) 187-193.
- 506 Murayama, O., Nishida, H. and Sekiguchi, K.: Novel peptide ligands for integrin $\alpha\beta 1$ selected from a phage display library. *J. Biochem. (Tokyo)*, 120 (1996) 445-451.
- 507 Nakano, Y., Tobe, T., Choi-Miura, N.-H., Mazda, T. and Tomita, M.: Isolation and characterization of GBP28, a novel gelatin-binding protein purified from human plasma. *J. Biochem. (Tokyo)*, 120 (1996) 803-812.
- 508 Nishitoh, H., Ichijo, H., Kimura, M., Matsumoto, T., Makishima, F., Yamaguchi, A., Yamashita, H., Enomoto, S. and Miyazono, K.: Identification of type I and type II serine/threonine kinase receptors for growth/differentiation factor-5. *J. Biol. Chem.*, 271 (1996) 21345-21352.
- 509 Okun, V.M. and Bilitewski, U.: Analysis of the biotin-binding protein actinavidin using affinity capillary electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1627-1632.
- 510 Orr, I. and Shoshan-Barmatz, V.: Modulation of the skeletal muscle ryanodine receptor by endogenous phosphorylation of 160/150-kDa proteins of the sarcoplasmic reticulum. *Biochim. Biophys. Acta*, 1283 (1996) 80-88.
- 511 Rhyner, J.A., Durussel, I., Cox, J.A., Ilg, E.C., Schäfer, B.W. and Heizmann, C.W.: Human recombinant alpha-parvalbumin and nine mutants with individually inactivated calcium- and magnesium-binding sites: biochemical and immunological properties. *Biochim. Biophys. Acta*, 1313 (1996) 179-186.
- 512 Roeth, P.J. and Easterbrook-Smith, S.B.: C1q is a nucleotide binding protein and is responsible for the ability of clusterin preparations to promote immune complex formation. *Biochim. Biophys. Acta*, 1297 (1996) 159-166.
- 513 Schell, A.A. and Pelham, H.R.B.: Purification and characterization of the human KDEL receptor. *Biochemistry*, 35 (1996) 10203-10209.
- 514 Vorum, H., Madsen, P., Rasmussen, H.H., Etzerodt, M., Svendsen, I., Celis, J.E. and Honoré, B.: Expression and divalent cation binding properties of the novel chemotactic inflammatory protein psoriasin. *Electrophoresis (Weinheim)*, 17 (1996) 1787-1796.
- 515 Wandel, S., Buchs, A., Schürmann, A., Summers, S.A., Powers, A.C., Shanahan, M.F. and Joost, H.-G.: Glucose transport activity and ligand binding (cytochalasin B, IAPS-forskolin) of chimeric constructs of GLUT2 and GLUT4 expressed in COS-7 cells. *Biochim. Biophys. Acta*, 1284 (1996) 56-62.
- 516 Wang, J., Moreira, K.M., Campos, B., Kaetzel, M.A. and Dedman, J.R.: Targeted neutralization of calmodulin in the nucleus blocks DNA synthesis and cell cycle progression. *Biochim. Biophys. Acta*, 1313 (1996) 223-228.
- 517 Zeng, F.-Y., Oka, J.A. and Weigel, P.H.: Renaturation and ligand blotting of the major subunit of the rat asialoglycoprotein receptor after denaturing polyacrylamide gel electrophoresis. *Glycobiology*, 6 (1996) 247-255; *C.A.*, 125 (1996) 28448a.

See also 223, 229, 321, 369, 371, 376, 393, 468, 593.

19m. Urinary proteins

- 518 Cesati, R. and Dolci, A.: Simple gold overstaining enhances sensitivity of automated electrophoresis of unconcentrated urine. *Clin. Chem. (Washington)*, 42 (1996) 1293-1294.
- 519 Okutani, R., Itoh, Y., Yamada, T., Yamaguchi, T., Singh, G., Yagisawa, H. and Kawai, T.: Preparation and characterization of human recombinant protein 1/Clara cell M_4 1000 protein. *Eur. J. Clin. Chem. Clin. Biochem.*, 34 (1996) 691-696.

19n. Other proteins (incl. proteinous inhibitors of enzymic activity)

- 520 Bayer, E.A., Ehrlich-Rogozinski, S. and Wilchek, M.: Sodium dodecyl sulfate-polyacrylamide gel electrophoretic method for assessing the quaternary state and comparative thermostability of avidin and streptavidin. *Electrophoresis (Weinheim)*, 17 (1996) 1319-1324.
- 521 Hartinger, J., Stenius, K., Högemann, D. and Jahn, R.: 16-BAC/SDS-PAGE: A two dimensional gel electrophoresis system suitable for the separation of integral membrane proteins. *Anal. Biochem.*, 240 (1996) 126-133.
- 522 Kurioka, A. and Hirano, H.: (Tricine SDS-polyacrylamide gel electrophoresis of low-molecular-weight cocoon shell proteins of the silkworm *Bombyx mori*). *Nippon Sanshigaku Zasshi*, 65 (1996) 125-127; *C.A.*, 125 (1996) 89002x.
- 523 Levy-Holtzman, R. and Schechter, I.: Expression of different forms of the heat-shock factor during the life cycle of the parasitic helminth *Schistosoma mansoni*. *Biochim. Biophys. Acta*, 1317 (1996) 1-4.
- 524 Munechika, I., Iwasaki, S. and Watanabe, S.: (Electrophoretic analysis of the egg albumen of jungle fowl). *Nippon Kakin Gakkaishi*, 33 (1996) 242-248; *C.A.*, 125 (1996) 215212f.
- 525 Nemoto, T., Matsusaka, T., Ota, M., Takagi, T., Collinge, D.B. and Walther-Larsen, H.: Dimerization characteristics of the 94-kDa glucose-regulated protein. *J. Biochem. (Tokyo)*, 120 (1996) 249-256.
- 526 Santaren, J.F.: Two-dimensional gel analysis of proteins in cell lines from the central nervous system of larval *Drosophila*. *In Vitro Cell. Dev. Biol.: Anim.*, 32 (1996) 434-440; *C.A.*, 125 (1996) 216149c.
- 527 Suzuki, M., Tamiya-Koizumi, K., Takemura, M., Furuta, K., Izuta, S., Savoysky, E., Miura, A. and Yoshida, S.: Replication protein-A mediates the association of calf thymus DNA polymerase α -DNA primase complex with guanine-rich DNA sequence. *J. Biochem. (Tokyo)*, 120 (1996) 766-772.
- 528 Yamashita, M. and Konagaya, S.: Molecular cloning and gene expression of chum salmon cystatin. *J. Biochem. (Tokyo)*, 120 (1996) 483-487.

See also 346, 392, 459, 653.

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- 529 Bories, P.N., Migot-Santos, H., Niel, P., Avesani, V., Delmee, M. and Leluan, G.: Enzyme electrophoresis combined with serogrouping for improved differentiation of *Clostridium difficile* strains. *Immunol. Med. Microbiol.*, 14 (1996) 187-193; *C.A.*, 125 (1996) 163117g.
- 530 Jansen, E.H.J.M., Laan, C.A. and de Fluiter, P.: Advances in sample preparation, electrophoretic separation and detection methods for rat cytochrome P450 enzymes. *J. Chromatogr. B*, 684 (1996) 133-145 - a review with 50 refs.
- 531 Nath, S., Schuette, H., Hustedt, H., Deckwer, W.-D. and Weber, G.: Separation of enzymes from microorganism crude extracts by free-flow zone electrophoresis. *Biotechnol. Bioeng.*, 51 (1996) 15-22; *C.A.*, 125 (1996) 52056s.
- 532 Solomon, M.G., Fitzgerald, J.D. and Murray, R.A.: Electrophoretic approaches to predator-prey interactions. *Syst. Assoc. Spec. Vol.*, 53(Ecology of Agricultural Pests) (1996) 457-468; *C.A.*, 125 (1996) 246452p.
- 20a. *Oxidoreductases*
- 533 Apanovitch, D. and Walz, F.G., Jr.: Adult-male-specific S-warfarin (11S-PH) and progesterone (20 β -OH) keto-reductases in rat hepatic microsomes are not identical. *Biochim. Biophys. Acta*, 1291 (1996) 16-26.
- 534 Britigan, B.E., Ratcliffe, H.R., Buettner, G.R. and Rosen, G.M.: Binding of myeloperoxidase to bacteria: effect on hydroxyl radical formation and susceptibility to oxidant-mediated killing. *Biochim. Biophys. Acta*, 1290 (1996) 231-240.
- 535 Bullock, J., Chowdhury, S. and Johnston, D.: Characterization of poly(ethylene glycol)-modified superoxide dismutase: comparison of capillary electrophoresis and matrix-assisted laser desorption/ionization mass spectrometry. *Anal. Chem.*, 68 (1996) 3258-3264.
- 536 Chen, C.-N. and Pan, S.-M.: Assay of superoxide dismutase activity by combining electrophoresis and densitometry. *Bot. Bull. Acad. Sin.*, 37 (1996) 107-111; *C.A.*, 125 (1996) 28730m.
- 537 D'Auria, S., la Cara, F., Nazzaro, F., Vespa, N. and Rossi, M.: A thermophilic alcohol dehydrogenase from *Bacillus acidocaldarius* not reactive towards ketones. *J. Biochem. (Tokyo)*, 120 (1996) 498-504.
- 538 Dong, S. and Liu, C.: (An iron staining method for determining of catalase activity). *Shengwu Huaxue Yu Shengwu Wuli Jinzhan*, 23 (1996) 86-88; *C.A.*, 125 (1996) 108446p.
- 539 Hiro, I., Tsugeno, Y., Hirashiki, I., Ogata, F. and Ito, A.: Characterization of rat monoamine oxidase A with noncovalently-bound FAD expressed in yeast cells. *J. Biochem. (Tokyo)*, 120 (1996) 759-765.
- 540 Ishida, T., Narita, M., Nozaki, M. and Horiike, K.: Selective cleavage and modification of the intersubunit disulfide bonds of bovine dopamine β -monooxygenase: conversion of tetramer to active dimer. *J. Biochem. (Tokyo)*, 120 (1996) 346-352.
- 541 Loeffelhardt, S., Borbe, H.O., Locher, M. and Bisswanger, H.: *In vivo* incorporation of lipoic acid enantiomers and homologues in the pyruvate dehydrogenase complex from *Escherichia coli*. *Biochim. Biophys. Acta*, 1297 (1996) 90-98.
- 542 Martínez-Julvez, M., Hurlay, J.K., Tollin, G., Gómez-Moreno, C. and Fillat, M.F.: Overexpression in *E. coli* of the complete peth gene product from *Anabaena*: purification and properties of a 49 kDa ferredoxin-NADP⁺ reductase. *Biochim. Biophys. Acta*, 1297 (1996) 200-206.
- 543 Mendoza-Hernández, G. and Rendón, J.L.: Human placental estradiol 17 β -dehydrogenase: structural and catalytic changes during urea denaturation. *Biochim. Biophys. Acta*, 1297 (1996) 219-227.
- 544 Michalski, W.P.: Chromatographic and electrophoretic methods for analysis of superoxide dismutases. *J. Chromatogr. B*, 684 (1996) 59-75 - a review with 159 refs.
- 545 Nakanishi, M., Kakumoto, M., Matsuura, K., Deyashiki, Y., Tanaka, N., Nonaka, T., Mitsui, Y. and Hara, A.: Involvement of two basic residues (Lys-17 and Arg-39) of mouse lung carbonyl reductase in NADP(H)-binding and fatty acid activation: site-directed mutagenesis and kinetic analyses. *J. Biochem. (Tokyo)*, 120 (1996) 257-263.
- 546 O'Carra, P., Griffin, T., O'Flaherty, M., Kelly, N. and Mukahy, P.: Further studies on the bioaffinity chromatography of NAD⁺-dependent dehydrogenases using the locking-on effect. *Biochim. Biophys. Acta*, 1297 (1996) 235-243.
- 547 Pasquo, A., Britton, K.L., Stillman, T.J., Rice, D.W., Cölfen, H., Harding, S.E., Scandurra, R. and Engel, P.C.: Construction of a dimeric form of glutamate dehydrogenase from *Clostridium symbiosum* by site-directed mutagenesis. *Biochim. Biophys. Acta*, 1297 (1996) 149-158.
- 548 Périé, F.H., Sheng, D. and Gold, M.H.: Purification and characterization of two manganese peroxidase isozymes from the white-rot basidiomycete *Dichomitus squalens*. *Biochim. Biophys. Acta*, 1297 (1996) 139-148.
- 549 Possekkel, S., Marsac, C. and Kadenbach, B.: Biochemical analysis of fibroblasts from patients with cytochrome c oxidase-associated Leigh syndrome. *Biochim. Biophys. Acta*, 1316 (1996) 153-159.
- 550 Scheibe, R., Baalman, E., Backhausen, J.E., Rak, C. and Vetter, S.: C-Terminal truncation of spinach chloroplast NAD(P)-dependent glyceraldehyde-3-phosphate dehydrogenase prevents inactivation and reaggregation. *Biochim. Biophys. Acta*, 1296 (1996) 228-234.
- 551 Toribio, F., Alhama, J. and López-Barea, J.: Methods for chromatographic and electrophoretic separation and assay of NADP⁺ oxidoreductases. *J. Chromatogr. B*, 684 (1996) 1-23 - a review with 214 refs.
- 552 Toribio, F., Martínez-Lara, E., Pascual, P. and López-Barea, J.: Methods for purification of glutathione peroxidase and related enzymes. *J. Chromatogr. B*, 684 (1996) 77-97 - a review with 227 refs.
- 553 Tozuka, M., Hidaka, H., Okumura, N., Ichikawa, T., Furihata, K. and Katsuyama, T.: A case of immunoglobulin A-Lambda conjugated with lactate dehydrogenase-5 isoenzyme, causing an extremely high enzyme activity in serum. *Clin. Chem. (Washington)*, 42 (1996) 11288-1290.
- 554 Tsui, H.-T., Mock, W.-Y., Lau, K.-K. and Fong, W.-P.: Proteolytic activation of grass carp (*Ctenopharyngodon idellus*) liver alcohol dehydrogenase. *Biochim. Biophys. Acta*, 1296 (1996) 41-46.

- 555 Zenno, S., Koike, H., Tanokura, M. and Saigo, K.: Gene cloning, purification, and characterization of NfsB, a minor oxygen-insensitive nitroreductase from *Escherichia coli*, similar in biochemical properties to FBase I, the major flavin reductase in *Vibrio fischeri*. *J. Biochem. (Tokyo)*, 120 (1996) 736-744.
- 556 Zhang, Q., Iwasaki, T., Wakagi, T. and Oshima, T.: 2-Oxoacid:ferredoxin oxidoreductase from the thermoacidophilic archaeon, *Sulfolobus* sp. strain 7. *J. Biochem. (Tokyo)*, 120 (1996) 587-599.
- See also 401, 624.
- 20b. *Transferases (excl. E.C. 2.7.-.-)*
- 557 Homma, H., Ogawa, K., Hirono, K., Morioka, Y., Hirota, M., Tanahashi, I. and Matsui, M.: Site-directed mutagenesis of rat hepatic hydroxysteroid sulfotransferases. *Biochim. Biophys. Acta*, 1296 (1996) 159-166.
- 558 Klebl, B.M. and Pette, D.: A fluorometric assay for measurement of mon-ADP-ribosyltransferase activity. *Anal. Biochem.*, 239 (1996) 145-152.
- 559 Luquita, M.G., Catania, V.A., Sánchez-Pozzi, E.J. and Mottino, A.D.: Ovine prolactin increases hepatic UDP-glucuronosyltransferase activity in ovariectomized rats. *J. Pharmacol. Exp. Ther.*, 278 (1996) 921-925.
- 560 Tilgmann, C. and Ulmanen, I.: Purification methods of mammalian catechol-O-methyltransferases. *J. Chromatogr. B*, 684 (1996) 147-161 - a review with 110 refs.
- 561 Wilhelm, B., Meinhardt, A. and Seitz, J.: Transglutaminases: purification and activity assays. *J. Chromatogr. B*, 684 (1996) 163-177 - a review with 79 refs.
- 20c. *Transferases transferring phosphorus containing groups (E.C. 2.7.-.-)*
- 562 Boutin, J.A.: Tyrosine protein kinase assays. *J. Chromatogr. B*, 684 (1996) 179-199 - a review with 160 refs.
- 563 Brady, W.A., Kokoris, M.S., Fitzgibbon, M. and Black, M.E.: Cloning, characterization, and modeling of mouse and human guanylate kinases. *J. Biol. Chem.*, 271 (1996) 16734-16740.
- 564 Gatti, A., Wang, X. and Robinson, P.J.: Protein kinase C- α is multiply phosphorylated in response to phorbol ester stimulation of PC12 cells. *Biochim. Biophys. Acta*, 1313 (1996) 111-118.
- 565 Godson, C., Masliah, E., Balboa, M.A., Ellisman, M.H. and Insel, P.A.: Isoform-specific redistribution of protein kinase C in living cells. *Biochim. Biophys. Acta*, 1313 (1996) 63-71.
- 566 Hu, H., Yang, Z. and Zhang, Y.: (Assay of subforms of creatine kinase MB in serum with agarose gel electrophoresis). *Zhonghua Yixue Jiannan Zazhi*, 18 (1995) 354-357; *C.A.*, 125 (1996) 28723n.
- 567 Krebs, J. and Honegger, P.: Calmodulin kinase IV: expression and function during rat brain development. *Biochim. Biophys. Acta*, 1313 (1996) 217-222.
- 568 Lichtigthagen, R. and Glaubitz, R.: A principle of quality assessment using a competitive polymerase chain reaction assay for the detection of *Chlamydia trachomatis* in cervical specimens. *Eur. J. Clin. Chem. Clin. Biochem.*, 34 (1996) 765-770.
- 569 Linde, L. and Jensen, K.F.: Uracil phosphoribosyltransferase from the extreme thermoacidophilic archaeobacterium *Sulfolobus shibatae* is an allosteric enzyme, activated by GTP and inhibited by CTP. *Biochim. Biophys. Acta*, 1296 (1996) 16-22.
- 570 Ma, Z., Ramanadham, S., Kempe, K., Hu, Z., Ladenson, J. and Turk, J.: Characterization of expression of phosphofructokinase isoforms in isolated rat pancreatic islets and purified beta cells and cloning and expression of the rat phosphofructokinase-A isoform. *Biochim. Biophys. Acta*, 1308 (1996) 151-163.
- 571 O'Gorman, E., Beutner, G., Wallimann, T. and Brdiczka, D.: Differential effects of creatine depletion on the regulation of enzyme activities and on creatine-stimulated mitochondrial respiration in skeletal muscle, heart, and brain. *Biochim. Biophys. Acta*, 1276 (1996) 161-170.
- 572 Tsukamoto, I., Wakabayashi, M., Takebayashi, K. and Nomura, S.: Control of thymidine kinase during liver regeneration after partial hepatectomy. *Biochim. Biophys. Acta*, 1290 (1996) 267-272.
- 573 Yoshida, K.-i., Hirata, T., Akita, Y., Mizukami, Y., Yamaguchi, K., Sorimachi, Y., Ishihara, T. and Kawashima, S.-i.: Translocation of protein kinase C- α , δ and ϵ isoforms in ischemic rat heart. *Biochim. Biophys. Acta*, 1317 (1996) 36-44.
- See also 318, 319, 391.
- 20d. *Hydrolases, acting on ester bonds (E.C. 3.1.-.-)*
- 574 Caselli, A., Cirri, P., Bonifacio, S., Manao, G., Camici, G., Capugli, G., Moneti, G. and Ramponi, G.: Identity of zinc ion-dependent acid phosphatase from bovine brain and myo-inositol 1-phosphatase. *Biochim. Biophys. Acta*, 1290 (1996) 241-249.
- 575 Delagebeaudeuf, C., Gassama, A., Collet, X., Nauze, M. and Chap, H.: Guinea pig intestinal phospholipase B: protein expression during enterocyte maturation and effects of N-oligosaccharide removal on enzymatic activities and protein stability. *Biochim. Biophys. Acta*, 1303 (1996) 119-126.
- 576 Karasawa, K., Kuge, O., Kawasaki, K., Hishijima, M., Nakano, Y., Tomita, M., Yokoyama, K., Setaka, M. and Nojima, S.: Cloning, expression and characterization of plasma platelet-activating factor-acetylhydrolase from guinea pig. *J. Biochem. (Tokyo)*, 120 (1996) 838-844.
- 577 Lee, F.-J.S., Lin, L.-w. and Smith, J.A.: Acetyl-CoA hydrolase involved in acetate utilization in *Saccharomyces cerevisiae*. *Biochim. Biophys. Acta*, 1297 (1996) 105-109.
- 578 Leroy, M.-J., Degerman, E., Taira, M., Murata, T., Wang, L.H., Movsesian, M.A., Meacci, E. and Manganiello, V.C.: Characterization of two recombinant PDE3 (cGMP-inhibited cyclic nucleotide phosphodiesterase) isoforms, RcGIP1 and HcGIP2, expressed in NIH 3006 murine fibroblasts and Sf9 insect cells. *Biochemistry*, 35 (1996) 10194-10202.
- 579 Maeda, S. and Kashiwabara, Y.: Purification and properties of a membrane-bound phospholipase B from *Mycobacterium lepraemurium*. *Biochim. Biophys. Acta*, 1303 (1996) 31-38.
- 580 Othman, R., Baker, S., Li, Y., Worrall, A.F. and Wilton, D.C.: Human non-pancreatic (group II) secreted phospholipase A₂ expressed from a synthetic gene in *Escherichia coli*: characterisation of N-terminal mutants. *Biochim. Biophys. Acta*, 1303 (1996) 92-102.

- 581 Ryu, S.B. and Wang, X.: Activation of phospholipase D and the possible mechanism of activation in wound-induced lipid hydrolysis in castor bean leaves. *Biochim. Biophys. Acta*, 1303 (1996) 243-250.
- 582 Wallace, B.H., Lott, J.A., Griffiths, J. and Kirkpatrick, R.B.: Isoforms of alkaline phosphatase determined by isoelectric focusing in patients with chronic liver disorders. *Eur. J. Clin. Chem. Clin. Biochem.*, 34 (1996) 711-720.
- See also 889.
- 20e. *Hydrolases, acting on glycosyl compounds (E.C. 3.2.-.-)*
- 583 Bijvoet, A.G.A., Kroos, M.A., Pieper, F.R., de Boer, H.A., Reuser, A.J.J., van der Ploeg, A.T. and Verbeet, M.P.: Expression of cDNA-encoded human acid α -glucosidase in milk of transgenic mice. *Biochim. Biophys. Acta*, 1308 (1996) 93-96.
- 584 Chen, J.-s., Saxton, J., Hemming, F.W. and Peberdy, J.F.: Purification and partial characterization of the high and low molecular weight form (S- and F-form) of invertase secreted by *Aspergillus nidulans*. *Biochim. Biophys. Acta*, 1296 (1996) 207-218.
- 585 Mikhaylova, M., Wiederschain, G., Mikhaylov, V. and Aerts, J.M.F.G.: The enzymatic hydrolysis of 6-acylamino-4-methylumbelliferyl- β -D-glucosides: identification of a novel human acid β -glucosidase. *Biochim. Biophys. Acta*, 1317 (1996) 71-79.
- 586 Moriyama, T. and Ikeda, H.: Hydrolases acting on glycosidic bonds: chromatographic and electrophoretic separations. *J. Chromatogr. B*, 684 (1996) 201-216 - a review with 199 refs.
- 587 Okubo, M., Aoyama, Y. and Murose, T.: A novel donor splice site mutation in the glycogen debranching enzyme gene is associated with glycogen storage disease type III. *Biochem. Biophys. Res. Commun.*, 224 (1996) 493-499.
- 588 Parrado, J., Escuredo, P.R., Conejero-Lara, F., Kotik, M., Ponting, C.P., Asenjo, J.A. and Dobson, C.M.: Molecular characterisation of a thermoactive β -1,3-glucanase from *Oerskovia xanthineolytica*. *Biochim. Biophys. Acta*, 1296 (1996) 145-151.
- 589 Rao, M.N., Kembhavi, A.A. and Pant, A.: Implication of tryptophan and histidine in the active site of endo-polygalacturonase from *Aspergillus ustus*: elucidation of the reaction mechanism. *Biochim. Biophys. Acta*, 1296 (1996) 167-173.
- 590 Takai, I., Oda, O., Shinzato, T., Ohbayashi, K., Yamanaka, N. and Maeda, K.: Effective method for purification of lysozyme from human urine. *J. Chromatogr. B*, 685 (1996) 21-25.
- 591 Takesue, Y. and Takesue, S.: Purification and characterization of α -glucosidase complex from the intestine of the frog, *Rana japonica*. *Biochim. Biophys. Acta*, 1296 (1996) 152-158.
- 592 Zhu, A., Monahan, C. and Wang, Z.-K.: Trp-16 is essential for the activity of α -galactosidase and α -N-acetylgalactosaminidase. *Biochim. Biophys. Acta*, 1297 (1996) 99-104.
- 20f. *Other hydrolases*
- 593 Bewsey, K.E., Wen, C., Purple, C. and Homandberg, G.A.: Fibronectin fragments induce the expression of stromelysin-1 mRNA and protein in bovine chondrocytes in monolayer culture. *Biochim. Biophys. Acta*, 1317 (1996) 55-64.
- 594 Chakraborti, T., Ghosh, S.K., Michael, J.R. and Chakraborti, S.: Role of an aprotinin-sensitive protease in the activation of Ca^{2+} -ATPase by superoxide radical (O_2^-) in microsomes of pulmonary vascular smooth muscle. *Biochem. J.*, 317 (1996) 885-890.
- 595 García-Fuentes, L., Ortiz, E., Jara, V. and Barón, C.: Preparative isolation of soluble form of bovine lung angiotensin converting enzyme by affinity and size exclusion chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 2443-2456.
- 596 Ibrahim-Granet, O. and Bertrand, O.: Separation of proteases: old and new approaches. *J. Chromatogr. B*, 684 (1996) 239-263 - a review with 161 refs.
- 597 Kharbanda, K.K., McVicker, D.L., Zetterman, R.K. and Donohue, T.M., Jr.: Ethanol consumption alters trafficking of lysosomal enzymes and affects the processing of procathepsin L in rat liver. *Biochim. Biophys. Acta*, 1291 (1996) 45-52.
- 598 Kobayashi, T., Shinozaki, A., Momoi, T., Arahata, K. and Tsukahara, T.: Identification of an interleukin-1 β converting enzyme-like activity that increases upon treatment of P19 cells with retinoic acid as the proteasome. *J. Biochem. (Tokyo)*, 120 (1996) 699-704.
- 599 Martín-Romero, F.J., García-Martín, E. and Gutiérrez-Merino, C.: Inactivation of ecto-ATPase activity of rat brain synaptosomes. *Biochim. Biophys. Acta*, 1283 (1996) 51-59.
- 600 Matveyev, V.V., Usmanova, A.M., Morozova, A.V., Collins, J.H. and Khaitlina, S.Yu.: Purification and characterization of the proteinase ECP 32 from *Escherichia coli* A2 strain. *Biochim. Biophys. Acta*, 1296 (1996) 55-62.
- 601 Meng, Q.C. and Oparil, S.: Purification and assay methods for angiotensin-converting enzyme. *J. Chromatogr. A*, 743 (1996) 105-122 - a review with 113 refs.
- 602 Michaud, D., Cantin, L., Bonadé-Bottino, M., Jouanin, L. and Vrain, T.C.: Identification of stable plant cystatin/nematode proteinase complexes using mildly denaturing gelatin/polyacrylamide gel electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1373-1379.
- 603 Okumura, Y., Kudoh, A., Takashima, M., Inoue, M., Sakai, K. and Kido, H.: Purification and characterization of a novel isoform of mast cell tryptase from rat tongue. *J. Biochem. (Tokyo)*, 120 (1996) 856-864.
- 604 Raspi, G.: Kallikrein and kallikrein-like proteinases: purification and determination by chromatographic and electrophoretic methods. *J. Chromatogr. B*, 684 (1996) 265-287 - a review with 251 refs.
- 605 Shihabi, Z.K. and Kute, T.E.: Analysis of cathepsin D from breast tissues by capillary electrophoresis. *J. Chromatogr. B*, 683 (1996) 125-131.
- 606 Stavridi, E.S., O'Malley, K., Lukacs, C.M., Moore, W.T., Lambris, J.D., Christianson, D.W., Rubin, H. and Cooperman, B.S.: Structural change in α -chymotrypsin induced by complexation with α 1-antichymotrypsin as seen by enhanced sensitivity to proteolysis. *Biochemistry*, 35 (1996) 10608-10615.
- 607 Strobel, R.S., Nagy, A.K., Knowles, A.F., Buegel, J. and Rosenberg, M.D.: Chicken oviductal ecto-ATP-diphosphohydrolase. Purification and characterization. *J. Biol. Chem.*, 271 (1996) 16323-16331.
- 608 Takeda, A., Masuda, Y., Yamamoto, T., Hirabayashi, T., Nakamura, Y. and Nakaya, K.: Cloning and analysis of cDNA encoding rat bleomycin hydrolase, a DNA-binding cysteine protease. *J. Biochem. (Tokyo)*, 120 (1996) 353-359.

- 609 Tokunaga, F., Tsukamoto, T. and Koide, T.: Cellular basis for protein C deficiency caused by a single amino acid substitution at Arg15 in the γ -carboxyglutamic acid domain. *J. Biochem. (Tokyo)*, 120 (1996) 360-368.
- 610 Yamanushi, T., Hirata, A., Oka, T. and Nakano, A.: Characterization of yeast *sar1* temperature-sensitive mutants, which are defective in protein transport from the endoplasmic reticulum. *J. Biochem. (Tokyo)*, 120 (1996) 452-458.
- See also 314, 382, 482, 633.
- 20g. Lyases**
- 611 Anagnostopoulos, C.G. and Kyriakidis, D.A.: Regulation of the *Escherichia coli* biosynthetic ornithine decarboxylase activity by phosphorylation and nucleotides. *Biochim. Biophys. Acta*, 1297 (1996) 228-234.
- 612 Bergenhem, N.: Chromatographic and electrophoretic methods related to the carbonic anhydrase isozymes. *J. Chromatogr. B*, 684 (1996) 289-305 - a review with 121 refs.
- 613 Jiang, L.L., Kobayashi, A., Matsuura, H., Fukushima, H. and Hashimoto, T.: Purification and properties of human D-3-hydroxyacyl-CoA dehydratase: medium-chain enoyl-CoA hydratase is D-3-hydroxyacyl-CoA dehydratase. *J. Biochem. (Tokyo)*, 120 (1996) 624-632.
- 614 Nakamura, T., Minoguchi, S. and Izui, K.: Purification and characterization of recombinant phosphoenolpyruvate carboxylase of *Thermus* sp. *J. Biochem. (Tokyo)*, 120 (1996) 518-524.
- 615 Suzuki, T., Hazeki, O., Hazeki, K., Ui, M. and Katada, T.: Involvement of the $\beta\gamma$ subunits of inhibitory GTP-binding protein in chemoattractant receptor-mediated potentiation of cyclic AMP formation in guinea pig neutrophils. *Biochim. Biophys. Acta*, 1313 (1996) 72-78.
- See also 624.
- 20h. Isomerases**
- 616 Kimura, K., Nozaki, N., Enomoto, T., Tanaka, M. and Kikuchi, A.: Analysis of M phase-specific phosphorylation of DNA topoisomerase II. *J. Biol. Chem.*, 271 (1996) 21439-21445.
- 617 Knudsen, B.R., Straub, T. and Boege, F.: Separation and functional analysis of eukaryotic DNA topoisomerases by chromatography and electrophoresis. *J. Chromatogr. B*, 684 (1996) 307-321 - a review with 101 refs.
- See also 889.
- 20i. Ligases**
- 618 Kim, S., Wilson, J.J., Allen, K.G.D. and Clarke, S.D.: Suppression of renal γ -glutamylcysteine synthetase expression in dietary copper deficiency. *Biochim. Biophys. Acta*, 1313 (1996) 89-94.
- 619 Kouna, K., Song, S., Haslam, G.C. and Himes, R.H.: Site-directed mutagenesis of putative catalytic and nucleotide binding sites in N¹⁰-formyltetrahydrofolate synthetase. *Biochim. Biophys. Acta*, 1296 (1996) 112-120.
- 620 Reynes, J., Pujol, C., Moreau, C., Mallie, M., Renaud, F., Janbon, F. and Bastide, J.-M.: Simultaneous carriage of *Candida albicans* strains from HIV-infected patients with oral candidiasis: multilocus enzyme electrophoresis analysis. *FEMS Microbiol. Lett.*, 137 (1996) 269-273; *C.A.*, 125 (1996) 31199a.
- 20j. Complex mixtures and incompletely identified enzymes**
- 621 Cox, J.M., Story, L., Bowles, R. and Woolcock, J.B.: Multilocus enzyme electrophoretic (MEE) analysis of Australian isolates of *Salmonella enteritidis*. *Int. J. Food Microbiol.*, 31 (1996) 273-282; *C.A.*, 125 (1996) 269671y.
- 622 Emnova, E.E., Vladko, I.P., Rusnak, T.N. and Merenyuk, G.V.: (Estimation of intrapopulation variability of *Pseudomonas fluorescens* in maize rhizosphere). *Mikrobiologiya*, 64 (1995) 797-800; *C.A.*, 125 (1996) 269662w.
- 623 Go, M.F., Kapur, V., Graham, D.Y. and Musser, J.M.: Population genetic analysis of *Helicobacter pylori* by multilocus enzyme electrophoresis: extensive allelic diversity and recombinational population structure. *J. Bacteriol.*, 178 (1996) 3934-3938; *C.A.*, 125 (1996) 81604z.
- 624 Jiang, L.L., Miyazawa, S. and Hashimoto, T.: Purification and properties of rat D-3-hydroxyacyl-CoA dehydratase: D-3-hydroxyacyl-CoA dehydratase/D-3-hydroxyacyl-CoA dehydrogenase bifunctional protein. *J. Biochem. (Tokyo)*, 120 (1996) 633-641.
- 625 Macartney, A.I., Tiku, P.E. and Cossins, A.R.: An isothermal induction of Δ^9 -desaturase in cultured carp hepatocytes. *Biochim. Biophys. Acta*, 1302 (1996) 207-216.
- 626 Rodriguez, E., de Meeus, T., Mallie, M., Renaud, F., Symoens, F., Mondon, P., Piens, M.-A., Lebeau, B., Viviani, M.A., et al.: Multicentric epidemiological study of *Aspergillus fumigatus* isolates by multilocus enzyme electrophoresis. *J. Clin. Microbiol.*, 34 (1996) 2559-2568; *C.A.*, 125 (1996) 269673a.
- 627 Wipf, D., Bedell, J.-P., Munch, J.C., Botton, B. and Buscot, F.: Polymorphism in morels: isoenzyme electrophoretic analysis. *Can. J. Microbiol.*, 42 (1996) 819-827; *C.A.*, 125 (1996) 216694b.
- See also 680.
- 21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS**
- 628 Slater, G.W. and Guo, H.L.: An exactly solvable Ogston model of gel electrophoresis. II. Sieving through periodic gels. *Electrophoresis (Weinheim)*, 17 (1996) 1407-1415.
- 21a. Purines, pyrimidines, nucleosides, nucleotides**
- 629 Ayni, I., Vauthier, C., Foulquier, M., Malvy, C., Fattal, E. and Couvreur, P.: Development of a quantitative polyacrylamide gel electrophoresis of a multichannel radioactivity counter for the evaluation of oligonucleotide-bound drug-carrier. *Anal. Biochem.*, 240 (1996) 202-209.
- 630 Dinh, T.Q., Sridhar, C.N. and Dattagupta, N.: Base composition analysis of phosphorothioate oligomers by capillary gel electrophoresis. *J. Chromatogr. A*, 744 (1996) 341-346.

- 631 Gelfi, C., Perego, M. and Righetti, P.G.: Capillary electrophoresis of oligonucleotides in sieving liquid polymers in isoelectric buffers. *Electrophoresis (Weinheim)*, 17 (1996) 1470-1475.
- 632 Khan, K., van Schepdael, A. and Hoogmartens, J.: Capillary electrophoresis of oligonucleotides using a replaceable sieving buffer with low viscosity-grade hydroxyethyl cellulose. *J. Chromatogr. A*, 742 (1996) 267-274.
- 633 Saevels, J., van den Steen, K., van Schepdael, A. and Hoogmartens, J.: Study of the competitive inhibition of adenosine deaminase by erythro-9-(2-hydroxy-3-nonyl)adenine using capillary zone electrophoresis. *J. Chromatogr. A*, 745 (1996) 293-298.
- 634 Talmadge, K.W., Zhu, M., Olech, L. and Siebert, C.: Oligonucleotide analysis by capillary polymer sieving electrophoresis using acryloylaminoethoxyethanol-coated capillaries. *J. Chromatogr. A*, 744 (1996) 347-354.
- 635 Tonello, G., Daglio, M., Zaccarelli, N., Sottofattori, E., Mazzei, M. and Balbi, A.: Characterization and quantitation of the active polynucleotide fraction (PDRN) from human placenta, a tissue repair stimulating agent. *J. Pharm. Biomed. Anal.*, 14 (1996) 155-1560.
- 636 Zamble, D.B., Mu, D., Reardon, J.T., Sancar, A. and Lippard, S.J.: Repair of cisplatin-DNA adducts by the mammalian excision nuclease. *Biochemistry*, 35 (1996) 10004-10013.
- 637 Zhang, R., Iyer, R.P., Yu, D., Tan, W., Zhang, X., Lu, Z., Zhao, H. and Agarwal, S.: Pharmacokinetics and tissue disposition of a chimeric oligodeoxynucleoside phosphorothioate in rats after intravenous administration. *J. Pharmacol. Exp. Ther.*, 278 (1996) 971-979.
- See also 142, 834.
- 21b. *Nucleic acids, RNA*
- 638 Brown, B.J., Hilfiker, H., DeMarco, S.J., Zacharias, D.A., Greenwood, T.M., Guerini, D. and Strehler, E.E.: Primary structure of human plasma membrane Ca²⁺-ATPase isoform 3. *Biochim. Biophys. Acta*, 1283 (1996) 10-13.
- 639 Burnham, C.E., Buerk, B., Schmidt, C. and Bucuvalas, J.C.: A liver-specific isoform of the betaine/GABA transporter in the rat: cDNA sequence and organ distribution. *Biochim. Biophys. Acta*, 1284 (1996) 4-8.
- 640 Cargnello, R., Celio, M.R., Schwaller, B. and Gotz, V.: Change of calretinin expression in the human colon adenocarcinoma cell line HT29 after differentiation. *Biochim. Biophys. Acta*, 1313 (1996) 201-208.
- 641 Celandier, D.W. and Nussbaum, J.M.: Efficient modification of RNA by porphyrin cation photochemistry: monitoring the folding of coaxially stacked RNA helices in tRNA^{Phe} and the human immunodeficiency virus type 1 Rev response element RNA. *Biochemistry*, 35 (1996) 12061-12069.
- 642 Chakraborty, A.K., Funasaka, Y., Slominski, A., Ermak, G., Hwang, J., Pawelek, J.M. and Ichihashi, M.: Production and release of proopiomelanocortin (POMC) derived peptides by human melanocytes and keratinocytes in culture: regulation by ultraviolet B. *Biochim. Biophys. Acta*, 1313 (1996) 130-138.
- 643 Chen, M.-S., Fornace, A., Jr. and Laszlo, A.: Characterization of an hsp70 related clone encoding a 33 kDa protein with homology to a protein which associates with polysomes. *Biochim. Biophys. Acta*, 1297 (1996) 124-126.
- 644 Chen, S.-C. and Boynton, A.L.: A new sensitive RNA dye requiring no destaining for use in formaldehyde gels. *J. Chin. Biochem. Sci.*, 23 (1994) 37-42; *C.A.*, 125 (1996) 29364g.
- 645 Chua, C.C., Hamdy, R.C. and Chua, B.H.L.: Regulation of endothelin-1 production by a thromboxane A₂ mimetic in rat heart smooth muscle cells. *Biochim. Biophys. Acta*, 1313 (1996) 1-5.
- 646 Degawa, M., Matsuda, K.-i., Arai, H. and Hashimoto, Y.: Lead nitrate inhibits the induction of CYP1A mRNAs by aromatic amines but not by aryl hydrocarbons in the rat liver. *J. Biochem. (Tokyo)*, 120 (1996) 547-551.
- 647 Dovichi, N.J. (Editor): *Paper Symposium: Nucleic Acid Electrophoresis* In: *Electrophoresis*, Vol. 17, No. 9, VCH, Weinheim, 1996, 111 pp.; *C.A.*, 125 (1996) 268699b.
- 648 Fernandez-Arcas, N., Dieguez-Lucena, J.L., Garcia-Villanova, J., Pena, J., Morell-Ocana, M. and Reyes-Engel, A.: Direct quantification of HIV-1 RNA in human plasma by free solution capillary electrophoresis (FSCE). *J. Acquired Immune Defic. Syndr. Hum. Retrovirol.*, 12 (1996) 107-111; *C.A.*, 125 (1996) 81033n.
- 649 Francone, O.L., Royer, L. and Haghpassand, M.: Increased pre-β-HDL levels, cholesterol, efflux, and LCAT-mediated esterification in mice expressing the human cholesteryl ester transfer protein (CETP) and human apolipoprotein A-I (Apo-I) transgenes. *J. Lipid Res.*, 37 (1996) 1268-1277.
- 650 Han, D.D.: Macromolecule recovery cassette. *U.S. US 5,538,614* (Cl. 204-613; B01D57/02), 23 Jul. 1996, Appl. 291,770, 17 Aug. 1994; 6 pp.; *C.A.*, 125 (1996) 137200j.
- 651 Hosaka, M., Toda, K., Takatsu, H., Torii, S., Murakami, K. and Nakayama, K.: Structure and intracellular localization of mouse ADP-ribosylation factors type 1 to type 6 (ARF1-ARF6). *J. Biochem. (Tokyo)*, 120 (1996) 813-819.
- 652 Iritani, N., Fukuda, H. and Tada, K.: Nutritional regulation of lipogenic enzyme gene expression in rat epididymal adipose tissue. *J. Biochem. (Tokyo)*, 120 (1996) 242-248.
- 653 Itoh, H., Tomita, M., Kobayashi, T., Uchino, H., Maruyama, H. and Nawa, Y.: Expression of inter-α-trypsin inhibitor light chain (bikunin) in human pancreas. *J. Biochem. (Tokyo)*, 120 (1996) 271-275.
- 654 Jones, C.G., Tucker, G.A. and Lycett, G.W.: Pattern of expression and characteristics of a cysteine proteinase cDNA from germinating seeds of pea (*Pisum sativum* L.). *Biochim. Biophys. Acta*, 1296 (1996) 13-15.
- 655 Kamanna, V.S., Pai, R., Bassa, B. and Kirschenbaum, M.A.: Activation of mesangial cells with TNF-α stimulates M-CSF gene expression and monocyte proliferation: evidence for involvement of protein kinase C and protein tyrosine kinase. *Biochim. Biophys. Acta*, 1313 (1996) 161-172.
- 656 Kojima, T., Fukuda, M., Aruga, J. and Mikoshiba, K.: Calcium-dependent phospholipid binding to the C2A domain of a ubiquitous form of double C2 protein (Doc2β). *J. Biochem. (Tokyo)*, 120 (1996) 671-676.
- 657 Kondoh, N., Noda, M., Fisher, R.J., Schweinfest, C.W., Papas, T.S., Kondoh, A., Samuel, K.P. and Oikawa, T.: The S29 ribosomal protein increases tumor suppressor activity of K rev-1 gene on v-K ras-transformed NIH3T3 cells. *Biochim. Biophys. Acta*, 1313 (1996) 41-46.

- 658 Lagadec, P., Reveneau, S., Lejeune, P., Pinard, D., Borman, T., Bauer, J. and Jeannin, J.-F.: Immunomodulator OM 163-induced reversal of tumor-mediated immunosuppression and downregulation of TGF- β 1 *in vivo*. *J. Pharmacol. Exp. Ther.*, 278 (1996) 926-933.
- 659 Longhurst, P.A., Schwegel, T., Folander, K. and Swanson, R.: The human P_{2X1} receptor: molecular cloning, tissue distribution, and localization to chromosome 17. *Biochim. Biophys. Acta*, 1308 (1996) 185-188.
- 660 Mahnke-Zizelman, D.K., van den Bergh, F., Bausch-Jurken, M.T., Eddy, R., Sait, S., Shows, T.B. and Sabina, R.L.: Cloning, sequence and characterization of the human AMPD2 gene: evidence for transcriptional regulation by two closely spaced promoters. *Biochim. Biophys. Acta*, 1308 (1996) 122-132.
- 661 Michalowski, D., Wrzesinski, J. and Krzyzosiak, W.: Cleavages induced by different metal ions in yeast tRNA^{Phe} U59C50 mutants. *Biochemistry*, 35 (1996) 10727-10734.
- 662 Miyamoto, T., Hayashi, M., Takeuchi, A., Okamoto, T., Kawashima, S., Takii, T., Hayashi, H. and Onozaki, K.: Identification of a novel growth-promoting factor with a wide target cell spectrum from various tumor cells as catalase. *J. Biochem. (Tokyo)*, 120 (1996) 725-730.
- 663 Mizuguchi, T., Mitaka, T., Kojima, T., Hirata, K., Nakamura, T. and Mochizuki, Y.: Recovery of mRNA expression of tryptophan 2,3-dioxygenase and serine dehydratase in long-term cultures of primary rat hepatocytes. *J. Biochem. (Tokyo)*, 120 (1996) 511-517.
- 664 Nakamura, M., Aoki, Y. and Hirano, D.: Cloning and functional expression of a cDNA encoding a mouse type 2 neuropeptide Y receptor. *Biochim. Biophys. Acta*, 1284 (1996) 134-137.
- 665 Navin, M.J.: Pulsed field duration electrophoresis of nucleic acids using variable pulse duration protocols (hydroxyethyl cellulose, polyacrylamide). Avail. *Univ. Microfilms Int.*, Order No. DA9624696, 1996, 105 pp.; *C.A.*, 125 (1996) 136996m.
- 666 Oda, K., Ito, M., Uchida, K.-i., Shibano, Y., Fukuhara, K.-i. and Takahashi, S.: Cloning and expression of an isovaleryl peptidase-insensitive carboxyl proteinase gene from *Xanthomonas* sp. T-22. *J. Biochem. (Tokyo)*, 120 (1996) 564-572.
- 667 Ohkura, N., Ito, M., Tsukada, T., Sasaki, K., Yamaguchi, K. and Miki, K.: Structure, mapping and expression of a human NOR-1 gene, the third member of the Nur77/NGF-B family. *Biochim. Biophys. Acta*, 1308 (1996) 205-214.
- 668 Otsuka, S., Tanaka, M., Saito, S., Yoshimoto, K. and Itakura, M.: Molecular cloning of a cDNA encoding human ribosomal protein L39. *Biochim. Biophys. Acta*, 1308 (1996) 119-121.
- 669 Righetti, P.G. and Gelfi, C.: Separation of nucleic acids by capillary electrophoresis in temporal thermal gradients in viscous polymer solutions. *PCT Int. Appl. WO 96 08,715* (Cl. GO1N27/447), 21 Mar. 1996, IT Appl. 94/MI1,864, 12 Sep. 1994; 28 pp.; *C.A.*, 125 (1996) 27669m.
- 670 Sakurai, J., Funae, Y. and Nemoto, N.: Maintenance and activation of Cyp2e-1 gene expression in mouse hepatocytes in primary culture. *Biochim. Biophys. Acta*, 1313 (1996) 35-40.
- 671 Sasaki, M. and Enami, J.: Structure and expression of a murine homologue of sky receptor tyrosine kinase gene. *J. Biochem. (Tokyo)*, 120 (1996) 264-270.
- 672 Scott, M. and Carr, D.J.J.: Morphine suppresses the alloantigen-driven CTL response in a dose-dependent and naltrexone reversible manner. *J. Pharmacol. Exp. Ther.*, 278 (1996) 980-988.
- 673 Sebokova, E., Klimes, I., Gasperikova, D., Bohov, P., Langer, P., Lavau, M. and Clandinin, M.T.: Regulation of gene expression for lipogenic enzymes in the liver and adipose tissue of hereditary hypertriglyceridemic, insulin-resistant rats: effect of dietary sucrose and marine fish oil. *Biochim. Biophys. Acta*, 1303 (1996) 56-62.
- 674 Skeidsvoll, J. and Ueland, P.M.: Analysis of RNA by capillary electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1512-1517.
- 675 Smetanina, N.S., Öner, C., Baysal, E., Öner, R., Bozkurt, G., Altay, C., Gürgey, A., Adekile, A.D., Gu, L.-H. and Huisman, T.H.J.: The relative levels of α_2 -, α_1 -, and ζ -mRNA in HB H patients with different deletional and nondeletional α -thalassemia determinants. *Biochim. Biophys. Acta*, 1316 (1996) 176-182.
- 676 Stoner, D.L., Browning, C.K., Bulmer, D.K., Ward, T.E. and MacDonell, M.T.: Direct 5S rRNA assay for monitoring mixed-culture bioprocesses. *Appl. Environ. Microbiol.*, 62 (1996) 1969-1978; *C.A.*, 125 (1996) 52802g.
- 677 Sugai, R., Takeuchi, M., Okuno, S. and Fujisawa, H.: Molecular cloning of a novel protein containing the association domain of calmodulin-dependent protein kinase II. *J. Biochem. (Tokyo)*, 120 (1996) 773-779.
- 678 Tsukahara, F., Hattori, M., Muraki, T. and Sakaki, Y.: Identification and cloning of a novel cDNA belonging to tetratricopeptide repeat gene family from Down syndrome-critical region 21a22.2. *J. Biochem. (Tokyo)*, 120 (1996) 820-827.
- 679 Umetani, N., Kanayama, Y., Okamura, M., Negoro, N. and Takeda, T.: Lovastatin inhibits gene expression of type-I scavenger receptor in THP-1 human macrophages. *Biochim. Biophys. Acta*, 1303 (1996) 199-206.
- 680 Yamaguchi, T., Kim, N.-S., Sekine, S., Seino, H., Osaka, F., Yamao, F. and Kato, S.: Cloning and expression of cDNA encoding a human ubiquitin-conjugating enzyme similar to the *Drosophila bendless* gene product. *J. Biochem. (Tokyo)*, 120 (1996) 494-497.

See also 131, 392, 399, 402, 570, 572, 577, 581, 593, 608, 618, 625, 704, 709, 726, 727, 770.

21c. Nucleic acids, DNA

- 681 Adkins, S. and Burmeister, M.: Visualization of DNA in agarose gels as migrating colored bands: applications for preparative gels and educational demonstrations. *Anal. Biochem.*, 240 (1996) 17-23.
- 682 Allen, P.D. and Newland, A.C.: Apoptosis detection by DNA analysis. In: Cotter, F.E. (Editor), *Mol. Diagn. Cancer, Humana*, Totowa, 1996, pp. 207-213; *C.A.*, 125 (1996) 239501a.
- 683 Arao, Y., Miyatake, N., Yamamoto, E., Usiku, H., Matsuura, A., Ninomiya, Y., Masushige, S., Hasegawa, T. and Kato, S.: Steroid hormones differentially induce transcription of the chicken ovalbumin gene, but stabilize the mRNA with the same half-life. *J. Biochem. (Tokyo)*, 120 (1996) 710-715.
- 684 Asoh, S., Mori, T., Hayashi, J.-I. and Ohta, S.: Expression of the apoptosis-mediator Fas is enhanced by dysfunctional mitochondria. *J. Biochem. (Tokyo)*, 120 (1996) 600-607.
- 685 Barron, A.E.: Capillary electrophoresis of DNA in uncrosslinked polymer solutions: an experimental and theoretical study. Avail. *Univ. Microfilms Int.*, Order No. DA9621049, 1995, 330 pp.; *C.A.*, 125 (1996) 162564p.

- 686 Barron, A.E., Sunada, W.M. and Blanch, H.W.: Capillary electrophoresis of DNA in uncrosslinked polymer solutions: evidence for a new mechanism of DNA separation. *Biotechnol. Bioeng.*, 52 (1996) 259-270; C.A., 125 (1996) 269676d.
- 687 Belgrader, P., Devaney, J.M., del Rio, S.A., Turner, K.A., Weaver, K.R. and Marino, M.A.: Automated polymerase chain reaction product sample preparation for capillary electrophoresis analysis. *J. Chromatogr. B*, 683 (1996) 109-114.
- 688 Belotserkovskii, B.P. and Johnston, B.H.: Capture in the gel: intermolecular triplex formation during gel electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1528-1534.
- 689 Benjamin, M.M. and Datta, A.R.: Modified pulsed field gel electrophoresis technique using Pefabloc SC for analyzing *Listeria monocytogenes* DNA. *Biochemica*, No. 2 (1995) 30-31; C.A., 125 (1996) 109449d.
- 690 Bently, S. and Bassam, B.J.: A robust DNA amplification fingerprinting system applied to analysis of genetic variation within *Fusarium oxysporum* f.sp. *cubense*. *J. Phytopathol.*, 144 (1996) 207-213; C.A., 125 (1996) 213583d.
- 691 Bountiff, L., Levantia, P. and Oxford, J.: Electrophoretic analysis of nucleic acids isolated from scrapie-infected hamster brain. *J. Gen. Virol.*, 77 (1996) 2371-2378; C.A., 125 (1996) 242176d.
- 692 Burland, V., Curtis, F.P. and Kusakawa, N.: Agarose gel analysis of 15-40-kb PCR amplicons. *Biotechniques*, 21 (1996) 142-144; C.A., 125 (1996) 106131b.
- 693 Butler, J.M.: Sizing and quantitation of polymerase chain reaction products by capillary electrophoresis for use in dna typing. Avail. *Univ. Microfilms Int.*, Order No. DA9615956, 1995, 254 pp.; C.A., 125 (1996) 77753e.
- 694 Carlsson, C. and Larsson, A.: Simulations of the overshoot in the build-up of orientation of long DNA during gel electrophoresis based on a distribution of oscillation times. *Electrophoresis (Weinheim)*, 17 (1996) 1425-1435.
- 695 Cobuzzi, R.J., Jr., Burhans, W.C. and Beerman, T.A.: Inhibition of initiation of simian virus 40 DNA replication in infected BSC-1 cells by the DNA alkylating drug adozelesin. *J. Biol. Chem.*, 271 (1996) 19852-19859.
- 696 Cockburn, D.J. and Seller, A.: Pulsed field gel electrophoresis for detection of gene rearrangements in Duchenne muscular dystrophy. In: Elles, R. (Editor), *Mol. Diagn. Genet. Dis.*, Humana, Totowa, 1996, pp. 283-298; C.A., 125 (1996) 266705b.
- 697 Dalsgaard, A., Skov, M.N., Serichantalergs, O. and Echeverria, P.: Comparison of pulsed-field gel electrophoresis and ribotyping for subtyping of *Vibrio cholerae* O139 isolated in Thailand. *Epidemiol. Infect.*, 117 (1996) 51-58; C.A., 125 (1996) 216850z.
- 698 Day, I.N.M.: DNA mutation or variation detection using hybridization of labeled oligonucleotide probe and analysis with temperature changes during electrophoresis. *PCT Int. Appl. WO 96 24,687* (Cl. C12Q1/68), 15 Aug. 1996, GB Appl. 95/2,660, 10 Feb. 1995; 33 pp.; C.A., 125 (1996) 214261j.
- 699 Dib, J.C., Dube, M., Kelly, C., Rinaldi, M.G. and Patterson, J.E.: Evaluation of pulsed-field gel electrophoresis as a typing system for *Candida rugosa*: comparison of karyotype and restriction fragment length polymorphisms. *J. Clin. Microbiol.*, 34 (1996) 1494-1496; C.A., 125 (1996) 52810h.
- 700 Dlakic, M., Park, K., Griffith, J.D., Harvey, S.C. and Harrington, R.E.: The organic crystallizing agent 2-methyl-2,4-pentanediol reduces DNA curvature by means of structural changes in A-tranacts. *J. Biol. Chem.*, 271 (1996) 17911-17919.
- 701 Fromenty, B., Manfredi, G., Sadlock, J., Zhang, L., King, M.P. and Schon, E.A.: Efficient and specific amplification of identified partial duplications of human mitochondrial DNA by long PCR. *Biochim. Biophys. Acta*, 1308 (1996) 222-230.
- 702 Gelfi, C., Perego, M., Libbra, F. and Righetti, P.G.: Comparison of behavior of N-substituted acrylamides and celluloses on double-stranded DNA separations by capillary electrophoresis at 25° and 60°C. *Electrophoresis (Weinheim)*, 17 (1996) 1342-1347.
- 703 Goff, R.B.: Agarose gel electrophoresis of DNA: a Brownian dynamics simulation. Avail. *Univ. Microfilms Int.*, Order No. DA9621585, 1996, 229p.; C.A., 125 (1996) 145899j.
- 704 Guo, Y., Wang, Z., Carter, A., Kaiser, K. and Dow, J.A.T.: Characterisation of vha26, the *Drosophila* gene for a 26kDa E-subunit of the vacuolar ATPase. *Biochim. Biophys. Acta*, 1283 (1996) 4-9.
- 705 Hagstrom, J.E., Sebestyen, M.G., Budker, V., Ludtke, J.J., Fritz, J.D. and Wolff, J.A.: Complexes of non-cationic liposomes and histone H1 mediate efficient transfection of DNA without encapsulation. *Biochim. Biophys. Acta*, 1284 (1996) 47-55.
- 706 Hammond, J.B., Spanswick, G. and Mawn, J.A.: Extraction of DNA from preserved animal specimens for use in randomly amplified polymorphic DNA analyses. *Anal. Biochem.*, 240 (1996) 298-300.
- 707 Hammond, R.W., Shi, X. and Morris, M.D.: Dynamics of T2 DNA during electrophoresis in entangled and ultradilute hydroxyethyl cellulose solutions. *J. Microcolumn Sep.*, 8 (1996) 201-210; C.A., 125 (1996) 52795g.
- 708 Hanekamp, J.S., Thilly, W.G. and Chaudhry, M.A.: Screening for human mitochondrial DNA polymorphisms with denaturing gradient gel electrophoresis. *Hum. Genet.*, 98 (1996) 243-245; C.A., 125 (1996) 186824z.
- 709 Hardy, E., Pupo, E., Casavilla, R., Sosa, A.E., Trujillo, L.E., López, E. and Castellanos-Serra, L.: Negative staining with zinc-imidazole of gel electrophoresis-separated nucleic acids. *Electrophoresis (Weinheim)*, 17 (1996) 1537-1541.
- 710 Heddi, A., Faure-Vigny, H., Wallace, D.C. and Stepien, G.: Coordinate expression of nuclear and mitochondrial genes involved in energy production in carcinoma and oncocyoma. *Biochim. Biophys. Acta*, 1316 (1996) 203-209.
- 711 Kamahori, M. and Kambara, H.: Characteristics of single-stranded DNA separation by capillary gel electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1476-1484.
- 712 Kambara, H.: DNA detector and DNA detection method. *US 5,516,409* (Cl. 204-603; C25D13/00), 14 May 1996, JP Appl. 91/34,006, 28 Feb. 1991; 30 pp.; C.A., 125 (1996) 29576c.
- 713 Karger, B.L., Foret, F. and Berka, J.: Capillary electrophoresis with polymer matrixes: DNA and protein separation and analysis. *Methods Enzymol.*, 271 (High Resolution Separation and Analysis of Biological Macromolecules) (1996) 293-319; C.A., 125 (1996) 269423u - a review with 83 refs.
- 714 Katsuragi, K., Kitagishi, K., Chiba, W., Ikeda, S. and Kinoshita, M.: Fluorescence-based polymerase chain reaction-single-strand conformation polymorphism analysis of p53 gene by capillary electrophoresis. *J. Chromatogr. A*, 744 (1996) 311-320.
- 715 Kemp, D.J. and Cappai, R.: Analysis of the genomes of protozoan parasites using PFGE. In: Monaco, A.P. (Editor), *Pulsed Field Gel Electrophor.*, IRL Press, Oxford, 1995, pp. 177-191; C.A., 125 (1996) 26989d - a review with 24 refs.

- 716 Klaude, M., Eriksson, S., Nygren, J. and Ahnstrom, G.: The comet assay: mechanisms and technical considerations. *Mutat. Res.*, 363 (1996) 89-96; C.A., 125 (1996) 78689a.
- 717 Kobayashi, H.: Clinical applications of single cell gel electrophoretic (SCG) assay in human malignant gliomas. Its role in prediction of the radiosensitivity and correlation with PCNA, MIB-1 and p53 immunoreactivity. *Gifu Daigaku Igakubu Kiyu*, 44 (1996) 140-150; C.A., 125 (1996) 269289e.
- 718 Kurzik-Dumke, U. and Zengerle, A.: Identification of a novel *Drosophila melanogaster* gene, *angel*, a member of a nested gene cluster at locus 59F4,5. *Biochim. Biophys. Acta*, 1308 (1996) 177-181.
- 719 Llovat, T., Coll, P., March, F., Montserrat, I., Atela, I., Mirelis, B. and Prats, G.: Comparison of macrorestriction analysis of genomic DNA by pulsed-field gel electrophoresis and ribotyping with conventional methods for differentiation of *Escherichia coli* O124 isolates. *Clin. Microbiol. Infect.*, 1 (1995) 127-133; C.A., 125 (1996) 269667b.
- 720 Marino, M.A., Weaver, K.R., Tully, L.A., Girard, J.E. and Belgrader, P.: Characterization of mitochondrial DNA using low-stringency single specific primer amplification analyzed by laser induced fluorescence-capillary electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1499-1504.
- 721 Masuda, H., Tanaka, K., Takagi, M., Ohgami, K., Sakamaki, T., Shibata, N. and Takahashi, K.: Molecular cloning and characterization of human non-smooth muscle calponin. *J. Biochem. (Tokyo)*, 120 (1996) 415-424.
- 722 Mateos, S., Gordon, A.T., Steel, G.G. and McMillan, T.J.: Cell-cycle variation in DNA migration in pulsed-field gel electrophoresis. *Int. J. Radiat. Biol.*, 69 (1996) 687-693; C.A., 125 (1996) 136986h.
- 723 Matushek, M.G., Bonten, M.J.M. and Hayden, M.K.: Rapid preparation of bacterial DNA for pulsed-field gel electrophoresis. *J. Clin. Microbiol.*, 34 (1996) 2598-2600; C.A., 125 (1996) 269674b.
- 724 Mautner, J., Bornkamm, G.W. and Polack, A.: Long-range chromatin analysis of the human MYC locus by pulsed-field gel electrophoresis. *Genes, Chromosomes Cancer*, 16 (1996) 247-253; C.A., 125 (1996) 269665z.
- 725 Miura, N., Ishida, N., Hoshino, M., Yamauchi, M., Hara, T., Ayusawa, D. and Kawakita, M.: Human UDP-galactose translocator: molecular cloning of a complementary DNA that complements the genetic defect of a mutant cell line deficient in UDP-galactose translocator. *J. Biochem. (Tokyo)*, 120 (1996) 236-241.
- 726 Monaco, A.P. (Editor): *Pulsed Field Gel Electrophoresis: A Practical Approach*. IRL Press, Oxford, 1995, 198 pp.; C.A., 125 (1996) 29564x.
- 727 Morrison, K.E., Qureshi, S.J., Anderson, S., Borrett, J.P., Theodosiou, A., Rodrigues, N., Blake, D., Nesbit, A., Davies, K.E., Porteous, D.J. and Brookes, A.J.: Novel transcribed sequences represented in the complex genomic region 5q13. *Biochim. Biophys. Acta*, 1308 (1996) 97-102.
- 728 Motaleb, M.A., Takihara, Y., Nomura, M., Matsuda, Y., Higashinakagawa, T. and Shimada, K.: Structural organization of the *rae28* gene, a putative murine homologue of the *Drosophila polyhomeotic* gene. *J. Biochem. (Tokyo)*, 120 (1996) 797-802.
- 729 Mukai, T., Hatada, I., Yamaoka, T., Kitagawa, K., Wang, X.-D., Sugama, T., Masuda, J. and Ogata, J.: A new imprinted gene, U2af-related sequence, isolated by a methylation-sensitive genome scanning method. In: Ohlsson, R., Hall, K. and Ritzen, M. (Editors), *Genomic Imprinting*, Cambridge University Press, Cambridge, 1995, pp. 342-356; C.A., 125 (1996) 27048h.
- 730 Myrold, D.D., Martin, K.J. and Ritchie, N.J.: Gel purification of soil DNA extracts. In: Akkermans, A.D.L., van Elsas, J.D. and de Bruijn, F.J. (Editors), *Mol. Microb. Ecol. Man.*, Kluwer, Dordrecht, 1995, pp. 1,3,5/1-1,3,5/9; C.A., 125 (1996) 136971z.
- 731 Nakabayashi, Y. and Nishigaki, K.: Single-strand conformation polymorphism (SSCP) can be explained by semistable conformation dynamics of single-stranded DNA. *J. Biochem. (Tokyo)*, 120 (1996) 320-325.
- 732 Nakamura, N., Hattori, N., Tanaka, M. and Mizuno, Y.: Specific detection of deleted mitochondrial DNA by *in situ* hybridization using a chimera probe. *Biochim. Biophys. Acta*, 1308 (1996) 215-221.
- 733 Ng, J., Ng, L.-K., Holst, E. and Dillon, J.-A.R.: Differentiation of protein L-containing and albumin-binding *Peptostreptococcus magnus* isolates by DNA amplification, ribotyping, and pulsed field gel electrophoresis. *Anaerobe*, 2 (1996) 95-102; C.A., 125 (1996) 109564n.
- 734 Oda, R.P., Wick, M.J., Rueckert, L.-M., Lust, J.A. and Landers, J.P.: Evaluation of capillary electrophoresis in polymer solutions with laser-induced fluorescence detection for the automated detection of T-cell gene rearrangements in lymphoproliferative disorders. *Electrophoresis (Weinheim)*, 17 (1996) 1491-1498.
- 735 Okamoto, K., Kadowaki, T., Nakayama, K. and Yamamoto, K.: Cloning and sequencing of the gene encoding a novel lysine-specific cysteine proteinase (Lys-gingipain) in *Porphyromonas gingivalis*: structural relationship with the arginine-specific cysteine proteinase (Arg-gingipain). *J. Biochem. (Tokyo)*, 120 (1996) 398-406.
- 736 Petit, F., Boucraut-Baralon, C., Py, R. and Bertagnoli, S.: Analysis of myxoma virus genome using pulsed-field gel electrophoresis. *Vet. Microbiol.*, 50 (1996) 27-32; C.A., 125 (1996) 162557p.
- 737 Pfaller, M.A., Wendt, C., Hollis, R.J., Wenzel, R.P., Fritschel, S.J., Neubauer, J.J. and Herwaldt, L.A.: Comparative evaluation of an automated ribotyping system versus pulsed-field gel electrophoresis for epidemiological typing of clinical isolates of *Escherichia coli* and *Pseudomonas aeruginosa* from patients with recurrent gram-negative bacteremia. *Diagn. Microbiol. Infect. Dis.*, 25 (1996) 1-8; C.A., 125 (1996) 189928x.
- 738 Potashkin, J., Wentz-Hunter, K. and Callaci, J.: BTFe is evolutionarily conserved in fission yeast. *Biochim. Biophys. Acta*, 1308 (1996) 182-184.
- 739 Sassi, A.P., Barron, A., Alonso-Amigo, M.G., Hion, D.Y., Yu, J.S., Soane, D.S. and Hooper, H.H.: Electrophoresis of DNA in novel thermoreversible matrices. *Electrophoresis (Weinheim)*, 17 (1996) 1460-1469.
- 740 Schickle, H.P. and Westermeier, R.: Introduction of two new electrophoresis gel systems for screening and high resolution identification of STRs under native conditions. *Adv. Forensic Haemogenet.*, 6 (1996) 380-382; C.A., 125 (1996) 159685y.

- 741 Schieldrop, P.J., Gelling, R.W., Elliot, R., Hewitt, J., Kieffer, T.J., McIntosh, C.H.S. and Pederson, R.A.: Isolation of a murine glucose-dependent insulinotropic polypeptide (GIP) cDNA from a tumor cell line (STC₆₋₁₄) and quantification of glucose-induced increases in GIP mRNA. *Biochim. Biophys. Acta*, 1308 (1996) 111-113.
- 742 Schwarz, H.: An inexpensive, home-made DNA size-standard. *Trends Genet.*, 12 (1996) 397; *C.A.*, 125 (1996) 266795f.
- 743 Sciacchitano, C.J. and Hirschfield, I.N.: Molecular detection of *Clostridium botulinum* type E neurotoxin gene in smoked fish by polymerase chain reaction and capillary electrophoresis. *J. Assoc. Off. Anal. Chem.*, 79 (1996) 861-865.
- 744 Sigmon, J. and Larcom, L.L.: The effect of ethidium bromide on mobility of DNA fragments in agarose gel electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1524-1527.
- 745 Siles, B.A., Collier, G.B., Reeder, D.J. and May, W.E.: The use of a new gel matrix for the separation of DNA fragments: a comparison study between slab gel electrophoresis and capillary electrophoresis. *Appl. Theor. Electrophor.*, 6 (1996) 15-22; *C.A.*, 125 (1996) 29458r.
- 746 Smith, J. and Singh, M.: System for accurate one-dimensional gel analysis including high-resolution quantitative footprinting. *BioTechniques*, 20 (1996) 1082-1087; *C.A.*, 125 (1996) 52803h.
- 747 Southern, E.M. and Elder, J.K.: Theories of gel electrophoresis of high molecular weight DNA. IN: Monaco, A.P. (Editor), *Pulsed Field Gel Electrophor.*, IRL Press, Oxford, 1995, pp. 1-19; *C.A.*, 125 (1996) 29299q - a review with 24 refs.
- 748 Stebbins, M.A., Hoyt, A.M., Sepaniak, M.J. and Hurlburt, B.K.: Design and optimization of a capillary electrophoretic mobility shift assay involving *trp* repressor-DNA complexes. *J. Chromatogr. B*, 683 (1996) 77-84.
- 749 Sumita, C. and Baba, Y.: (Application of capillary electrophoresis to DNA diagnosis for human diseases). *Seibutsu Butsuri Kagaku*, 40 (1996) 161-165; *C.A.*, 125 (1996) 106039j - a review with 8 refs.
- 750 Sun, D., Hurley, L.H. and Harshey, R.M.: Structural distortions induced by integration host factor (IHF) at the H' site of phage λ probed by (+)-CC-1065, pluramycin, and KMnO₄ and by DNA cyclization studies. *Biochemistry*, 35 (1996) 10815-10827.
- 751 Sutherland, B.M., Bennett, P.V. and Sutherland, J.C.: Double strand breaks induced by low doses of γ -rays or heavy ions: quantitation in nonradioactive human DNA. *Anal. Biochem.*, 239 (1996) 53-60.
- 752 Swaminathan, B., Matar, G.M., Reeves, M.W., Graves, L.M., Ajello, G., Bibb, W.F., Helsei, L.O., Morales, M., Dronavalli, H., et al.: Molecular subtyping of *Neisseria meningitidis* serogroup B: comparison of five methods. *J. Clin. Microbiol.*, 32 (1996) 1468-1473; *C.A.*, 125 (1996) 27134h.
- 753 Tinland, B.: Dispersion coefficients of λ DNA in agarose gels during electrophoresis by fringe recovery after photobleaching. *Electrophoresis (Weinheim)*, 17 (1996) 1519-1523.
- 754 Tomita, M., Okuyama, T., Hidaka, K., Ameno, S., Ameno, K. and Ijiri, I.: Application of capillary gel electrophoresis to the diagnosis of the aldehyde dehydrogenase 2 genotype. *J. Chromatogr. B*, 685 (1996) 185-190.
- 755 Valentini, A., Timperio, A.M., Cappuccio, I. and Zolla, L.: Random amplified polymorphic DNA (RAPD) interpretation requires a sensitive method for the detection of amplified DNA. *Electrophoresis (Weinheim)*, 17 (1996) 1553-1554.
- 756 Waldman, B.C., O'Quinn, J.R. and Waldman, A.S.: Enrichment for gene targeting in mammalian cells by inhibition of poly(ADP-ribosylation). *Biochim. Biophys. Acta*, 1308 (1996) 241-250.
- 757 Wrestler, J.C., Lipes, B.D., Birren, B.W. and Lai, E.: Pulsed-field gel electrophoresis. *Methods Enzymol.*, 270(High Resolution Separation and Analysis of Biological Macromolecules, Pt. A) (1996) 296-319; *C.A.*, 125 (1996) 162582t.
- 758 Wu, Y., Hofstra, R.M.W., Scheffer, H., Uitterlinden, A.G., Mul-laart, E., Buys, C.H.C.M. and Vijg, J.: Comprehensive and accurate mutation scanning of the CFTR gene by two-dimensional DNA electrophoresis. *Hum. Mutat.*, 8 (1996) 160-167; *C.A.*, 125 (1996) 186814w.
- 759 Xia, M., Roberts, M.C., Whittington, W.L., Holmes, K.K., Knapp, J.S., Dillon, J.-A.R. and Wi, T.: *Neisseria gonorrhoeae* with decreased susceptibility to ciprofloxacin: pulsed-field gel electrophoresis typing of strains from North America, Hawaii, and the Philippines. *Antimicrob. Agents Chemother.*, 40 (1996) 2439-2440; *C.A.*, 125 (1996) 270217m.
- 760 Xydas, S., Lange, C.S. and Neimark, H.C.: Effect of methylation on the electrophoretic mobility of chromosomal DNA in pulsed-field agarose gels. *Appl. Theor. Electrophor.*, 6 (1996) 43-47; *C.A.*, 125 (1996) 29460k.
- 761 Yarmola, E., Sokoloff, H. and Chrambach, A.: The relative contributions of dispersion and diffusion to band spreading (resolution) in gel electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1416-1419.
- 762 Zeng, R., Chang, S., Liu, Z. and You, M.: (Contour-clamped homogeneous electric field (CHEF) gel electrophoresis as a means for probe of chromosomal aberration induced by protoplast fusion of distantly related Basidiomycetes strains). *Weishengwu Xuebao*, 36 (1996) 213-219; *C.A.*, 125 (1996) 266740j.
- 763 Zimmermann, M. and Fournier, P.: Electrophoretic karyotyping of yeasts. In: Wolf, K. (Editor), *Nonconv. Yeasts Biotechnol.*, Springer, Berlin, 1996, pp. 101-116; *C.A.*, 125 (1996) 269411p - a review with many refs.
- 764 Zirkle, R.E. and Krieg, N.R.: Development of a method based on alkaline gel electrophoresis for estimation of oxidative damage to DNA in *Escherichia coli*. *J. Appl. Bacteriol.*, 81 (1996) 133-138; *C.A.*, 125 (1996) 187719f.
- See also 17, 26, 35, 131, 183, 358, 647, 650, 660, 664, 665, 667, 669, 803, 804, 817.
- 21d. *Structural studies on RNA and RNA mapping*
- 765 Nuebel, U., Engelen, B., Felske, A., Snaidr, J., Wieshuber, A., Amann, R.I., Ludwig, W. and Backhaus, H.: Sequence heterogeneities of genes encoding 16S rRNAs in *Paenibacillus polymyxa* detected by temperature gradient gel electrophoresis. *J. Bacteriol.*, 178 (1996) 5636-5643; *C.A.*, 125 (1996) 266993u.
- 766 Takahashi, Y., Tani, T. and Ohshima, Y.: Spliceosomal introns in conserved sequences of U1 and U5 small nuclear RNA genes in yeast *Rhodotorula hasegawae*. *J. Biochem. (Tokyo)*, 120 (1996) 677-683.
- See also 671, 750.

21e. Structural studies on DNA and DNA mapping

- 767 Akillu, E., Persson, I., Bertilsson, L., Johansson, I., Rodrigues, F. and Ingelman-Sundberg, M.: Frequent distribution of ultrarapid metabolizers of debrisoquine in an Ethiopian population carrying duplicated and multiduplicated functional CYP2D6 alleles. *J. Pharmacol. Exp. Ther.*, 278 (1996) 441-446.
- 768 Alonso, A., Martin, P., Albarran, C., Garcia, O. and Sancho, M.: Rapid detection of sequence polymorphisms in the human mitochondrial DNA control region by polymerase chain reaction and single-strand conformation analysis in mutation detection enhancement gels. *Electrophoresis (Weinheim)*, 17 (1996) 1299-1301.
- 769 Baba, Y.: (Analysis of DNA sequence using capillary electrophoretic technologies). *Kuromatogurafi*, 17 (1996) 106-109; C.A., 125 (1996) 109117u - a review with 3 refs.
- 770 Bashkin, J.S., Barker, D.L. and Johnston, R.F.: Denaturing separation matrix having hydroxyethyl cellulose for nucleic acid electrophoresis. *U.S. US 5,534,123* (Cl. 204-455; GO1N27/26), 9 Jul. 1996, Appl. 500,097, 10 Jul. 1995; 7 pp.; C.A., 125 (1996) 107047x.
- 771 Brooks, R.A. and Winton, D.J.: Determination of spatial patterns of DNA damage and repair in intestinal crypts by multi-cell gel electrophoresis. *J. Cell Sci.*, 109 (1996) 2061-2068; C.A., 125 (1996) 215729e.
- 772 Buenz, A.P., Barron, A.E., Prausnitz, J.M. and Blanch, H.W.: Capillary electrophoretic separation of DNA restriction fragments in mixtures of low- and high-molecular-weight hydroxyethylcellulose. *Ind. Eng. Chem. Res.*, 35 (1996) 2900-2908; C.A., 125 (1996) 186772f.
- 773 Carrilho, E., Ruiz-Martinez, M.C., Berka, J., Smirnov, I., Goetzinger, W., Miller, A.W., Brady, D. and Karger, B.L.: Rapid DNA sequencing of more than 1000 bases per run by capillary electrophoresis using replaceable linear polyacrylamide solutions. *Anal. Chem.*, 68 (1996) 3305-3313.
- 774 Chen, N., Wu, L., Palm, A., Srichaiyo, T. and Hjertén, S.: High-performance field inversion capillary electrophoresis of 0.1-23 kbp DNA fragments with low-gelling, replaceable agarose gels. *Electrophoresis (Weinheim)*, 17 (1996) 1443-1450.
- 775 Clark, B.K.: DNA restriction fragment analysis using size-selective capillary electrophoresis with laser induced fluorescence detection. *Avail. Univ. Microfilms Int.*, Order No. DA9619600, 1995, 126 pp.; C.A., 125 (1996) 77752d.
- 776 Decorte, R. and Cassiman, J.-J.: Evaluation of the ALF DNA sequencer for high-speed sizing of short tandem repeat alleles. *Electrophoresis (Weinheim)*, 17 (1996) 1542-1549.
- 777 Endo, I. and Yohda, M.: (The role of capillary electrophoresis in human genome analysis). *Seibutsu Butsuri Kagaku*, 40 (1996) 135-140; C.A., 125 (1996) 106038h - a review with 14 refs.
- 778 Fang, Y., Zhang, J.Z., Hou, J.Y., Lu, H. and Dovichi, N.J.: Activation energy of the separation of DNA sequencing fragments in denaturing noncross-linked polyacrylamide by capillary electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1436-1442.
- 779 Figeys, D., Ahmadzadeh, H., Arriaga, E. and Dovichi, N.J.: Pseudo-coulometric loading in capillary electrophoresis DNA sequencing. *J. Chromatogr. A*, 744 (1996) 325-331.
- 780 Frazier, R.R., Millican, E.S., Watson, S.K., Oldroyd, N.J., Sparkes, R.L., Taylor, K.M., Panchal, S., Bark, L., Kimpton, C.P. and Gill, P.D.: Validation of the Applied Biosystems Prism™ 377 automated sequencer for forensic short tandem repeat analysis. *Electrophoresis (Weinheim)*, 17 (1996) 1550-1552.
- 781 Guan, L.L., Morii, T., Otsuka, M. and Sugiura, Y.: Specific interaction with guanine residues of Z-form DNA by bleomycin-nickel(III) complex. *Biochim. Biophys. Acta*, 1308 (1996) 169-176.
- 782 Guerry, E., Martin, O.C., Tricoire, H., Siebert, R. and Valentin, L.: A numerical study of persistence length effects on DNA conformation in sequencing electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1420-1424.
- 783 Guttman, A. and Szökö, É.: Capillary gel electrophoretic separation of DNA restriction fragments in a discontinuous buffer system. *J. Chromatogr. A*, 744 (1996) 321-324.
- 784 Hood, D.W.: PFGE in the study of a bacterial pathogen (*Haemophilus influenzae*). In: Monaco, A.P. (Editor), *Pulsed Field Gel Electrophor.*, IRL Press, Oxford, 1995, pp. 159-176; C.A., 125 (1996) 26988c - a review with 14 refs.
- 785 Horn, D., Robinson, P.N., Böddrich, A., Buske, A., Tinschert, S. and Nürnberg, P.: Three novel mutations of the NF1 gene detected by temperature gradient gel electrophoresis of exons 5 and 8. *Electrophoresis (Weinheim)*, 17 (1996) 1559-1563.
- 786 Hu, J. and van Eldik, L.J.: S100 β induces apoptotic cell death in cultured astrocytes via a nitric oxide-dependent pathway. *Biochim. Biophys. Acta*, 1313 (1996) 239-245.
- 787 Isenberg, A.R., McCord, B.R., Koons, B.W., Budowle, B. and Allen, R.O.: DNA Typing of a polymerase chain reaction amplified D1S80/amelogenin multiplex using capillary electrophoresis and a mixed entangled polymer matrix. *Electrophoresis (Weinheim)*, 17 (1996) 1505-1511.
- 788 Jensen, H.K., Jensen, L.G., Hansen, P.S., Faergeman, O. and Gregersen, N.: High sensitivity of the single-strand conformation polymorphism method for detecting sequence variations in the low-density lipoprotein receptor gene validated by DNA sequencing. *Clin. Chem. (Washington)*, 42 (1996) 1140-1146.
- 789 Kao, W.Y., Dworkin, L.L., Briggs, J.A. and Briggs, R.C.: Characterization of the human myeloid cell nuclear differentiation antigen gene promoter. *Biochim. Biophys. Acta*, 1308 (1996) 201-204.
- 790 Kawakami, F., Inoe, H. and Ikeda, K.: (PCR-based methods for detecting mutations in genomic DNA using non-radioactive labels). *Jpn. Kokai Tokkyo Koho JP 08,154,679* [96,154,679] (Cl. C12N15/09), 18 Jun. 1996, Appl. 94/307,755, 12 Dec. 1994; 9 pp.; C.A., 125 (1996) 134799a.
- 791 Kostka, H., Steinke, M., Gehrisch, S. and Jaross, W.: Detection of point mutations in lipoprotein lipase (LPL) gene by TGGE. *Z. Gastroenterol.*, 34(Suppl. 3) (1996) 62-63; C.A., 125 (1996) 159740n.
- 792 Lanneluc, I., Mulsant, P., Harrison, B. and Drinkwater, R.D.: Denaturing gradient gel electrophoresis detection of polymorphism in a PCR fragment of sheep epidermal growth factor gene. *Anim. Genet.*, 27 (1996) 99-101; C.A., 125 (1996) 133853b.

- 793 Lee, W.-K., Cho, M.-J., Kim, K.-H., Kim, S.-H., Park, P.-S., Lee, S.-Y., Baik, S.-C. and Rhee, K.-H.: (Identification of *Helicobacter pylori* strains by pulsed-field gel electrophoresis (PFGE) and restriction fragment length polymorphism (RFLP)). *Taehan Misaegmul Hakhoechi*, 30 (1995) 641-650; *C.A.*, 125 (1996) 81205v.
- 794 Lubjuhn, T., Epplen, C. and Epplen, J.T.: Multilocus fingerprinting and single locus analyses in the great tit for paternity determination. *Electrophoresis (Weinheim)*, 17 (1996) 1555-1558.
- 795 Mansfield, E.S., Vainer, M., Enad, S., Barker, D.L., Harris, D., Rappaport, E. and Fortina, P.: Sensitivity, reproducibility, and accuracy in short tandem repeat genotyping using capillary array electrophoresis. *Genome Res.*, 6 (1996) 893-903; *C.A.*, 125 (1996) 239535q.
- 796 Marotta, S.P., Tamburri, P.A. and Sjeardy, R.D.: Sequence and environmental effects on the self-assembly of DNA oligomers possessing G_xT₂G_y segments. *Biochemistry*, 35 (1996) 10484-10492.
- 797 Mathieu, J., Ferlat, S., Ferrand, D., Platel, S., Ballester, B., Mestries, J.C., Chancerelle, Y. and Kergonou, J.F.: Measurement of one of the features of apoptosis: DNA fragmentation. In: Favier, A.E. (Editor), *Anal. Free Radicals Biol. Syst.*, Birkhaeuser, Basel, 1995, pp. 225-236; *C.A.*, 125 (1996) 52671p.
- 798 Menchen, S., Johnson, B., Winnik, M.A. and Xu, B.: Flowable networks as DNA sequencing media in capillary columns. *Electrophoresis (Weinheim)*, 17 (1996) 1451-1459.
- 799 Merel, P., Dupin, B., Comeau, F., Lacoste, L. and Vezon, G.: Completely automated extraction of DNA from whole blood. *Clin. Chem. (Washington)*, 42 (1996) 1285-1286.
- 800 Moissenet, D., Valcin, M., Marchand, V., Grimprel, E., Begue, P., Garbarg-Chenon, A. and Vu-Thien, H.: Comparative DNA analysis of *Bordetella pertussis* clinical isolates by pulsed-field gel electrophoresis, randomly amplified polymorphism DNA, and ERIC polymerase chain reaction. *FEMS Microbiol. Lett.*, 143 (1996) 127-132; *C.A.*, 125 (1996) 266702y.
- 801 Murray, A.E., Hollibauch, J.T. and Orrego, C.: Phylogenetic compositions of bacterioplankton from two California estuaries compared by denaturing gradient gel electrophoresis of 16S rDNA fragments. *Appl. Environ. Microbiol.*, 62 (1996) 2676-2680; *C.A.*, 125 (1996) 109436x.
- 802 Muth, J., Müller, O., Berka, J., Leonard, J.T. and Karger, B.L.: DNA sequence analysis of PstI-modified restriction fragments after collection from capillary electrophoresis with replaceable matrices. *J. Chromatogr. A*, 744 (1996) 303-310.
- 803 Nackerdien, Z. and Atha, D.: Measurement of ⁶⁰Co-γ ray-induced DNA damage by capillary electrophoresis. *J. Chromatogr. B*, 683 (1996) 85-89.
- 804 Nackerdien, Z., Morris, S., Choquette, S., Ramos, B. and Atha, D.: Analysis of laser-induced plasmid DNA photolysis by capillary electrophoresis. *J. Chromatogr. B*, 683 (1996) 91-96.
- 805 Nissen, H., Guldborg, P., Hansen, A.B., Petersen, N.E. and Hoerder, M.: Clinically applicable mutation screening in familial hypercholesterolemia. *Hum. Mutat.*, 8 (1996) 168-177; *C.A.*, 125 (1996) 186815x.
- 806 Norioka, N., Norioka, S., Ohnishi, Y., Ishimizu, T., Oneyama, C., Nakanishi, T. and Sakiyama, F.: Molecular cloning and nucleotide sequences of cDNAs encoding S-allele specific stylar RNases in a self-incompatible cultivar and its self-compatible mutant of Japanese pear, *Pyrus pyrofolia* Nakai. *J. Biochem. (Tokyo)*, 120 (1996) 335-345.
- 807 Ohshima, K., Kang, S., Larson, J.E. and Wells, R.D.: TTA•TAA triplet repeats in plamids form a non-H bonded structure. *J. Biol. Chem.*, 271 (1996) 16784-16791.
- 808 Oroskar, A.A., Rasmussen, S.-E., Rasmussen, H.N., Rasmussen, S.R., Sullivan, B.M. and Johansson, A.: Detection of immobilized amplicons by ELISA-like techniques. *Clin. Chem. (Washington)*, 42 (1996) 1547-1555.
- 809 Pastinen, T., Partanen, J. and Syvänen, A.-C.: Multiplex, fluorescent, solid-phase minisequencing for efficient screening of DNA sequence variation. *Clin. Chem. (Washington)*, 42 (1996) 1391-1397.
- 810 Philips, C.P., Lareu, M.V., Lincoln, P.J. and Thomson, J.A.: Investigation of the STR locus HUMTH01 using PCR and agarose electrophoresis: Caucasian population survey and usefulness in paternity investigations. In: Jacob, B. and Bonte, W. (Editors), *Adv. Forensic Sci., Proc. Meet. Int. Assoc. Forensic Sci., 13th 1995*, Verlag Dr. Koester, Berlin, 1995, pp. 80-84; *C.A.*, 125 (1996) 78722f.
- 811 Rodriguez-Calvo, M.S., Bellas, S., Soto, J.L., Barros, F. and Caracado, A.: Comparison of different electrophoretic methods for digital typing of the MS32 (D158) locus. *Electrophoresis (Weinheim)*, 17 (1996) 1294-1298.
- 812 Rojas, E., Valverde, M., Sordo, M. and Ostrosky-Wegman, P.: DNA damage in exfoliated buccal cells of smokers assessed by the single-cell gel electrophoresis assay. *Mutat. Res.*, 370 (1996) 115-120; *C.A.*, 125 (1996) 267981a.
- 813 Ruiz-Martinez, M.C., Carrilho, E., Berka, J., Kieleczawa, J., Miller, A.W., Foret, F., Carson, S. and Karger, B.L.: DNA sequencing by capillary electrophoresis using short oligonucleotide primer libraries. *BioTechniques*, 20 (1996) 1058-1062; *C.A.*, 125 (1996) 27088w.
- 814 Samore, M.H., Kristjansson, M., Venkataraman, L., DeGirolami, P.C. and Arbeit, R.D.: Comparison of arbitrarily-primed polymerase chain reaction, restriction enzyme analysis and pulsed-field gel electrophoresis for typing *Clostridium difficile*. *J. Microbiol. Methods*, 25 (1996) 215-224; *C.A.*, 125 (1996) 186785n.
- 815 Sciacchitano, C.J.: Analysis of polymerase chain reaction-amplified DNA fragments of *Clostridium botulinum* type E neurotoxin gene by high performance capillary electrophoresis. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 2165-2178.
- 816 Seetulsingh, P.S., Tomayko, J.F., Coudron, P.E., Markowitz, S.M., Skinner, C., Singh, K.V. and Murray, B.E.: Chromosomal DNA restriction endonuclease digestion patterns of β-lactamase-producing *Enterococcus faecalis* isolates collected from a single hospital over a 7-year period. *J. Clin. Microbiol.*, 34 (1996) 1892-1896; *C.A.*, 125 (1996) 190360n.
- 817 Singhal, R.P. and Xian, J.: Separation of nucleic acids and oligonucleotides and sequencing of DNA fragments by capillary electrophoresis. *Prog. Pharm. Biomed. Anal.*, 2(Pharmaceutical and Biomedical Applications of Capillary Electrophoresis) (1996) 387-424; *C.A.*, 125 (1996) 269416u - a review with many refs.
- 818 Song, L., Xiong, S., Chen, H. and Cheng, J.: (Capillary array gel electrophoresis - a new technology for DNA sequencing). *Huaxue Tongbao*, (1996) 13-18; *C.A.*, 125 (1996) 213435g - a review with 25 refs.
- 819 Sumitani, S., Ishikawa, Y. and Minami, R.: Non-radioactive DNA diagnosis of dentatorubral-pallidolusian atrophy and Machado-Joseph disease using a new primer set. *Clin. Chim. Acta*, 254 (1996) 187-195.

- 820 Takeuchi, S., Suzuki, H., Yabuuchi, M. and Takahashi, S.: A possible involvement of melanocortin 1-receptor in regulating feather color pigmentation in the chicken. *Biochim. Biophys. Acta*, 1308 (1996) 164-168.
- 821 Wang, E. and Hu, H.: Characterization of chromosome constitution of eight pollen-derived plants by biochemical markers. *Chin. Sci. Bull.*, 41 (1996) 149-152; *C.A.*, 125 (1996) 133932b.
- 822 Wang, Y., Wallin, J.M., Ju, J., Sensabaugh, G.F. and Mathies, R.A.: High-resolution capillary array electrophoretic sizing of multiplexed short tandem repeat loci using energy-transfer fluorescent primers. *Electrophoresis (Weinheim)*, 17 (1996) 1485-1490.
- 823 Zhang, N. and Yeung, E.S.: Genetic typing by capillary electrophoresis with the allelic ladder as an absolute standard. *Anal. Chem.*, 68 (1996) 2927-2931.
- See also 27, 622, 687, 888.
- 21f. *Complex mixtures of nucleic acids and their fragments*
- 824 Cann, J.R.: Comment on mobility-shift computations featuring cage effects. *Electrophoresis (Weinheim)*, 17 (1996) 1535-1536.
- See also 748, 902.
22. ALKALOIDS
- 825 Yang, S.S., Smetena, I. and Goldsmith, A.I.: Evaluation of micellar electrokinetic capillary chromatography for the analysis of selected tobacco alkaloids. *J. Chromatogr. A*, 746 (1996) 131-136.
- See also 891.
23. OTHER SUBSTANCES CONTAINING HETEROCYCLIC NITROGEN
- 23a. *Porphyrins and other pyrroles*
- 826 Bowser, M.T., Sternberg, E.D. and Chen, D.D.Y.: Development and application of a nonaqueous capillary electrophoresis system for the analysis of porphyrins and their oligomers (PHOTOFIN). *Anal. Biochem.*, 241 (1996) 143-150.
- See also 126.
- 23c. *Indole derivatives and plant hormones (gibberelins)*
- 827 Agerbirk, N., Bjerregaard, C., Olsen, C.E. and Sørensen, H.: Kinetic investigation of the transformations of indol-3-ylcarbinol into oligomeric indolyl compounds based on micellar electrokinetic capillary chromatography. *J. Chromatogr. A*, 745 (1996) 239-248.
- 828 Liu, J. and Li, S.F.Y.: Separation and determination of auxins by capillary electrophoresis. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 1697-1713.
- See also 50, 237.
- 23d. *Pyridine derivatives*
- 829 Bullock, J.: Capillary electrophoretic purity method for the novel metal chelator TMT-NCS. *J. Pharm. Biomed. Anal.*, 14 (1996) 845-854.
- See also 23.
- 23e. *Other N-heterocyclic compounds*
- See 275.
24. ORGANIC SULPHUR COMPOUNDS (INCL. GLUCOSINOLATES)
- 830 Welch, G.N., Upchurch, G.R., Jr. and Loscalzo, J.: S-Nitrosothiol detection. *Methods Enzymol.*, 268(Nitric Oxide, Part A) (1996) 293-298; *C.A.*, 125 (1996) 269785p.
- See also 301, 829.
25. ORGANIC PHOSPHORUS COMPOUNDS (INCL. SUGAR PHOSPHATES)
- 831 Mercier, J.-P., Morin, P., Dreux, M. and Tambute, A.: Capillary electrophoresis analysis of chemical warfare agent breakdown products. I. Counterelectroosmotic separation of alkylphosphonic acids and their monoester derivatives. *J. Chromatogr. A*, 741 (1996) 279-285.
- 832 Mikalsen, S.-O. and Kaalhus, O.: A characterization of per-vanadate, an inducer of cellular tyrosine phosphorylation and inhibitor of gap junctional intercellular communication. *Biochim. Biophys. Acta*, 1290 (1996) 308-318.
- 833 Roberts, M.A., Locascio-Brown, L., MacCrehan, W.A. and Durst, R.A.: Liposome behavior in capillary electrophoresis. *Anal. Chem.*, 68 (1996) 3434-3440.
- 834 Wang, Q., Luo, G., Wang, R., Zhou, W. and Zhao, Y.: Analysis of the reaction products of N-(O,O-diisopropyl)phosphorylthreonine with uridine by capillary zone electrophoresis with diode array detection and capillary electrophoresis-mass spectrometry. *J. Chromatogr. A*, 745 (1996) 263-272.
- See also 324, 445, 510, 630, 844.
26. ORGANOMETALLIC AND RELATED COMPOUNDS
- 26a. *Organometallic compounds*
- 835 Carro Diaz, A.M., Lorenzo-Ferreira, R.A. and Cela-Torrijos, R.: Validation and quality control of methylmercury determinations by means of capillary electrophoresis. *Mikrochim. Acta*, 123 (1996) 73-86; *C.A.*, 125 (1996) 165983k.
- 836 Lee, Y.-T. and Whang, C.-W.: Capillary electrophoresis of triorganotin compounds with indirect fluorescence detection. *J. Chromatogr. A*, 746 (1996) 269-275.

27. VITAMINS AND VARIOUS ANIMAL GROWTH FACTORS (NON-PEPTIDIC)

- 837 Davey, M.W., Bauw, G. and van Montagu, M.: Analysis of ascorbate in plant tissues by high-performance capillary zone electrophoresis. *Anal. Biochem.*, 239 (1996) 8-19.
- 838 Ma, Y.: Quantitative retinol assay for serum and dried blood spots. *U.S. Pat.* 5,532,166 (Cl. 436-86; GO1N21/64), 2 Jul. 1996, *US Appl.* 228,674, 18 Apr. 1994; 13 pp.; *C.A.*, 125 (1996) 109664v.
- 839 Profumo, A., Profumo, V. and Vidali, G.: Micellar electrokinetic capillary chromatography of three natural vitamin A derivatives. *Electrophoresis (Weinheim)*, 17 (1996) 1617-1621.
- 840 Vogt, C. and Kiessig, S.: Separation of D/L-carnitine enantiomers by capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 53-60.

See also 277.

28. ANTIBIOTICS

- 841 Fang, X., Liu, X., Ye, J. and Fang, Y.: Determination of lincomycin and lincomycin B in bulk drug and pharmaceutical formulations by capillary zone electrophoresis with amperometric detection. *Anal. Lett.*, 29 (1996) 1975-1984.
- 842 Nickerson, B., Cunningham, B. and Scypinski, S.: The use of capillary electrophoresis to monitor the stability of a dual-action cephalosporin in solution. *J. Pharm. Biomed. Anal.*, 14 (1995) 73-83.
- 843 Nishi, H., Nakamura, K., Nakai, H. and Sato, T.: Enantiomer separation by capillary electrophoresis using DEAE-dextran and aminoglycosidic antibiotics. *Chromatographia*, 43 (1996) 426-430.

29. INSECTICIDES, PESTICIDES AND OTHER AGROCHEMICALS

29a. General techniques

See 897.

29c. Phosphorus insecticides

- 844 Cikalo, M.G., Goodall, D.M. and Matthews, W.: Analysis of glyphosate using capillary electrophoresis with indirect detection. *J. Chromatogr. A*, 745 (1996) 189-200.

29e. Herbicides

- 845 Hsieh, Y.-Z. and Huang, H.-Y.: Analysis of chlorophenoxy acid herbicides by cyclodextrin-modified capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 217-223.
- 846 Penmetsa, K.V., Leidy, R.B. and Shea, D.: Herbicide analysis by micellar electrokinetic capillary chromatography. *J. Chromatogr. A*, 745 (1996) 201-208.

- 847 Song, X. and Budde, W.L.: Capillary electrophoresis-electrospray mass spectra of the herbicides paraquat and diquat. *J. Am. Soc. Mass Spectrom.*, 7 (1996) 981-986; *C.A.*, 125 (1996) 160989g.

See also 134.

29f. Fungicides

- 848 Lo, C.-C. and Hsiao, Y.-M.: High-performance capillary electrophoretic method for the determination of antibiotic fungicide kasugamycin in formulated products. *J. Agric. Food Chem.*, 44 (1996) 2231-2234; *C.A.*, 125 (1996) 79230f.

30. SYNTHETIC AND NATURAL DYES

30a. Synthetic dyes

- 849 Robertson, J., Wells, R.J., Pailthorpe, M.T., Daavid, S., Aumatell, A. and Clark, R.: An assessment of the use of capillary electrophoresis for the analysis of acid dyes in wool fibers. In: Jacob, B. and Bonte, W. (Editors), *Adv. Forensic Sci., Proc. Meet. Int. Assoc. Forensic Sci.*, 13th 1995, Vol. 4, Verlag Dr. Koester, Berlin, 1995, pp. 247-249; *C.A.*, 125 (1996) 27811b.
- 850 Watanabe, T.: (Analysis of food colors and other food components by capillary electrophoresis). *Jpn. Fudo Saiensu*, 35 (1996) 39-43; *C.A.*, 125 (1996) 193641r - a review with 18 refs.

See also 155.

30b. Chloroplast and other natural pigments

- 851 Watanabe, T., Hasegawa, N., Yamamoto, A., Nagai, S. and Terabe S.: (Capillary electrophoresis of anthraquinone pigments for food). *Bunseki Kagaku*, 45 (1996) 765-770; *C.A.*, 125 (1996) 245902y.

31. PLASTICS AND THEIR INTERMEDIATES

- 852 McNair, H.M. and Sun, X.: Polyamides (nylon) composition analysis by capillary zone electrophoresis. *J. Capillary Electrophor.*, 3 (1996) 51-53; *C.A.*, 125 (1996) 87685y.
- 853 Toroczai, Z. and Zia, R.K.P.: A model for electrophoresis of polymers with impurities: Exact distribution for a steady state. *Phys. Lett. A*, 217 (1996) 97-103; *C.A.*, 125 (1996) 59584w.

See also 901.

32. DRUG ANALYSIS

32a. Drug analysis, general techniques

- 854 Altria, K.D. and Bestford, J.: Main component assay of pharmaceuticals by capillary electrophoresis: considerations regarding precision, accuracy, and linearity data. *J. Capillary Electrophor.*, 3 (1996) 13-23; *C.A.*, 125 (1996) 123845m - a review with 62 refs.
- 855 Bunke, A. and Jira, T.: Chiral capillary electrophoresis using a cationic cyclodextrin. *Pharmazie*, 51 (1996) 672-673.
- 856 Lamoree, M.H., Sprang, A.F.H., Tjaden, U.R. and van der Greef, J.: Use of heptakis(2,6-di-O-methyl)- β -cyclodextrin in on-line capillary zone electrophoresis-mass spectrometry for the chiral separation of ropivacaine. *J. Chromatogr. A*, 742 (1996) 235-242.
- 857 Liley, K.A. and Wheat, T.E.: Drug identification in biological matrices using capillary electrophoresis and chemometric software. *J. Chromatogr. B*, 683 (1996) 67-76.
- 858 Otterness, I.G., Daumy, G.O., Gollaher, M.G., Jr., Downs, J.T., Zuzel, T.J., Bliven, M.L. and Merenda, J.M.: Determining selectivity of drugs by quantitative two-dimensional gel analysis. A study of tenidap, piroxicam, and dexamethasone. *Biochem. Pharmacol.*, 52 (1996) 917-925; *C.A.*, 125 (1996) 211668m.
- 859 Parker, M., Aliphon, J. and Clarke, I.: Extended automated operation: A CE/laboratory robotics interface. *Am. Lab. (Shelton)*, 28 (1996) 94-95; *C.A.*, 125 (1996) 177524z.
- 860 Peterson, A.G., Ahuja, E.S. and Foley, J.P.: Enantiomeric separations of basic pharmaceutical drugs by micellar electrokinetic chromatography using a chiral surfactant, N-dodecoxycarbonyl-valine. *J. Chromatogr. B*, 683 (1996) 15-28.
- 861 Schwarz, M.A., Neubert, R.H.H. and Rüttinger, H.H.: Application of capillary electrophoresis for characterizing interactions between drugs and bile salts. Part I. *J. Chromatogr. A*, 745 (1996) 135-143.
- 862 Shibukawa, A. and Nakagawa, T.: (Application of capillary electrophoresis to drug-protein binding study). *Seibutsu Butsuri Kagaku*, 40 (1996) 141-146; *C.A.*, 125 (1996) 104107f - a review with 16 refs.
- 863 Steinmann, L. and Thormann, W.: Characterization of competitive binding, fluorescent drug immunoassays based on micellar electrokinetic capillary chromatography. *Electrophoresis (Weinheim)*, 17 (1996) 1348-1356.
- 864 Szökő, É., Gyimesi, J., Barcza, L. and Magyar, K.: Determination of binding constants and the influence of methanol on the separation of drug enantiomers in cyclodextrin modified capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 181-187.
- 865 Thormann, W., Zhang, C.-X. and Schmutz, A.: Capillary electrophoresis for drug analysis in body fluids. *Ther. Drug Monit.*, 18 (1996) 506-520; *C.A.*, 125 (1996) 184620f - a review with 51 refs.

See also 24, 113, 150, 152, 160, 162, 164, 165, 171, 195.

32b. Antirheumatics and antiinflammatory drugs

- 866 Gu, X., Meleka-Boules, M. and Chen, C.-L.: Micellar electrokinetic capillary chromatography combined with immunoaffinity chromatography for identification and determination of dexamethasone and flumethasone in equine urine. *J. Capillary Electrophor.*, 3 (1996) 43-49; *C.A.*, 125 (1996) 78708f.
- 867 Shihabi, Z.K. and Hinsdale, M.E.: Analysis of ibuprofen in serum by capillary electrophoresis. *J. Chromatogr. B*, 683 (1996) 115-118.
- 868 Taylor, M.R., Westwood, S.A. and Perrett, D.: Determination of phase II drug metabolites in equine urine by micellar electrokinetic capillary chromatography. *J. Chromatogr. A*, 745 (1996) 155-163.

32c. Autonomic and cardiovascular drugs

- 869 Bretnall, A.E. and Clarke, G.S.: Selectivity of capillary electrophoresis for the analysis of cardiovascular drugs. *J. Chromatogr. A*, 745 (1996) 145-154.
- 870 Shafaati, A. and Clark, B.J.: Development and validation of a capillary zone electrophoretic method for the determination of atenolol in presence of its related substances in bulk and tablet dosage form. *J. Pharm. Biomed. Anal.*, 14 (1996) 1547-1554.
- 871 Valaskova, I., Balazova, J. and Havranek, E.: (Analysis of infusion solutions containing the injection preparations cardilan and magnesium sulphuricum by the capillary isotachophoretic method). *Ceska Slov. Farm.*, 45 (1996) 129-131; *C.A.*, 125 (1996) 123937t.
- 872 Williams, R.C., Alasandro, M.S., Fasone, V.L., Boucher, R.J. and Edwards, J.F.: Comparison of liquid chromatography, capillary electrophoresis and super-critical fluid chromatography in the determination of Losartan Potassium drug substance in Cozaar tablets. *J. Pharm. Biomed. Anal.*, 14 (1996) 1539-1546.

32d. Central nervous system drugs

- 873 Ku, Y.-R., Tsai, M.-J., Lin, J.-H. and Wen, K.-C.: Micellar electrokinetic capillary chromatography of clobenzorex hydrochloride and diazepam adulterated in anorexic traditional Chinese medicine. *Chin. Pharm. J. (Taipei)*, 48 (1996) 157-165; *C.A.*, 125 (1996) 187743j.
- 874 Shihabi, Z.K. and Oles, K.S.: Serum lamotrigine analysis by capillary electrophoresis. *J. Chromatogr. B*, 683 (1996) 119-123.
- 875 Wu, H.L., Otsuka, K. and Terabe, S.: Chiral separation of reduced haloperidol by capillary zone electrophoresis with heptakis (2,6-di-O-methyl)- β -cyclodextrin. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 1567-1577.
- 876 Zhou, X., Gu, J., Fu, R., Dai, R., Zhang, L. and Jin, S.: (Chiral separation of tetrahydro- β -carboline compounds by capillary zone electrophoresis using β -cyclodextrin as chiral selector). *Fenxi Huaxue*, 24 (1996) 497-500; *C.A.*, 125 (1996) 47936z.
- 877 Zou, D., Wu, X. and Nan, G.: (Determination of an antipyretic-analgesic compound preparation-Qutong pian (sardon) with micellar electrokinetic capillary chromatography). *Yaowu Fenxi Zazhi*, 16 (1996) 92-94; *C.A.*, 125 (1996) 177566q.

32e. *Chemotherapeutics (exc. cytostatics and antibiotics)*

- 878 Von Heeren, F., Tanner, R., Theurillat, R. and Thormann, W.: Determination of fluconazole in human plasma by micellar electrokinetic capillary chromatography with detection at 190 nm. *J. Chromatogr. A*, 745 (1996) 165-172.

See also 278.

32f. *Cytostatics*

- 879 Hempel, G., Lehmkühl, D., Krümpelmann, S., Blaschke, G. and Boos, J.: Determination of paclitaxel in biological fluids by micellar electrokinetic chromatography. *J. Chromatogr. A*, 745 (1996) 173-179.
- 880 Hill, S., Aewiou, J., Kavanagh, P.E., Livingston, P.C., Shalliker, R.A. and Sosic, J.: Separation of ifosamide and its degradation products using micellar electrokinetic chromatography. *Anal. Commun.*, 33 (1996) 235-237; *C.A.*, 125 (1996) 151279y.

See also 636.

32g. *Other drug categories*

- 881 Castelnovo, P. and Albanesi, C.: Separation of the four stereoisomers of Z11556A, intermediate in the synthesis of triazole antimycotics, by capillary electrophoresis. *J. Chromatogr. A*, 741 (1996) 123-130.
- 882 Fanali, S. and Desiderio, C.: Use of vancomycin as chiral selector in capillary electrophoresis. Optimization and quantitation of loxiglumide enantiomers in pharmaceuticals. *J. High Resolut. Chromatogr.*, 19 (1996) 322-326.
- 883 Felli, C., Carrea, G., Chiari, M., de Amici, M. and de Micheli, C.: Chiral separation of muscarinic antagonists by capillary zone electrophoresis with cyclodextrin additives. *J. Chromatogr. A*, 741 (1996) 287-294.
- 884 Freisleben, H.-J., Fürstenberger, H.-J., Deisinger, S., Freisleben, K.B., Wiernsperger, N. and Zimmer, G.: Interaction of glucose and metformin with isolated red cell membrane. *Arzneim.-Forsch.*, 46 (1996) 773-778.
- 885 Rocco, M.V., Buckalew, V.M., Jr., Moore, L.C. and Shihabi, Z.K.: Capillary electrophoresis for the determination of glomerular filtration rate using nonradioactive iohexol. *Am. J. Kidney Dis.*, 28 (1996) 173-177; *C.A.*, 125 (1996) 216133t.

See also 175, 189.

32h. *Toxicological and forensic applications*

- 886 Benson, L.M., Tomlinson, A.J., Mayeno, A.N., Gleich, G.J., Wells, D. and Naylor, S.: Membrane preconcentration-capillary electrophoresis-mass spectrometry (mPC-CE-MS) analysis of 3-phenylamino-1,2-propanediol (PAP) metabolites. *J. High Resolut. Chromatogr.*, 19 (1996) 291-294.
- 887 Hamdan, M., Curcuruto, O. and Zaramella, A.: Biomedical and forensic applications of CZE/MS. *Chim. Ind. (Milan)*, 78 (1996) 697-705; *C.A.*, 125 (1996) 214374y.

- 888 Kimpton, C.P., Oldroyd, N.J., Watson, S.K., Frazier, R.R.E., Johnson, P.E., Millican, E.S., Urquhart, A., Sparkes, B.L. and Gill, P.: Validation of highly discriminating multiplex short tandem repeat amplification systems for individual identification. *Electrophoresis (Weinheim)*, 17 (1996) 1283-1293.

- 889 Kuchheuser, W. and Krause, D.: Simultaneous focusing of PGM1 and ACP phenotypes using miniaturized gels and 3-electrode technique. *Adv. Forensic Haemogenet.*, 6 (1996) 438-440; *C.A.*, 125 (1996) 160623h.

- 890 Walker, J.A., Marche, H.L., Newby, N. and Bechtold, E.J.: A free zone capillary electrophoresis method for the quantitation of common illicit drug samples. *J. Forensic Sci.*, 41 (1996) 824-829; *C.A.*, 125 (1996) 214386d.

See also 270, 292, 300, 302, 780, 812, 849, 876.

32i. *Plant extracts*

- 891 Sheu, S.-J. and Lu, C.-F.: Capillary electrophoresis determination of six bioactive constituents in San-Huang-Hsin-Tang. *J. High Resolut. Chromatogr.*, 19 (1996) 409-412.

See also 188, 195.

33. CLINICO-CHEMICAL APPLICATIONS

33a. *General papers and reviews*

- 892 Fernandez Espina, C.: (Capillary electrophoresis in the clinical laboratory). *Acta Bioquim. Clin. Latinoam.*, 30 (1996) 165-178; *C.A.*, 125 (1996) 215953y - a review with many refs.

33b. *Complex mixtures and profiling (single compounds by cross-reference only)*

- 893 Jellum, E., Dollekamp, H. and Blessum, C.: Capillary electrophoresis for clinical problem solving: analysis of urinary diagnostic metabolites and serum proteins. *J. Chromatogr. B*, 683 (1996) 55-65.

- 894 Sunzeri, F.J.: Capillary electrophoresis assay method useful for the determination of constituents of a clinical sample. *U.S. US 5,536,382 (Cl. 204-451; GO1D57/02)*, 16 Jul. 1996, US Appl. 226,173, 23 May 1994; 7 pp.; *C.A.*, 125 (1996) 137217v.

See also 54, 205, 226, 227, 229, 237, 256, 261, 434, 436, 447, 518, 553, 582, 788, 799, 819, 840, 857, 861.

34. FOOD ANALYSIS

34a. *General papers and reviews*

- 895 Sasaki, H., Yanekubo, J. and Sakai, T.: (Characteristics of capillary electrophoresis and its application to food component analysis). *Jpn. Fudo Saiensu*, 35, No. 8 (1996) 32-38; *C.A.*, 125 (1996) 245837f - a review without refs.

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

- 896 Chen, I.-C., Chapman, F.A., Wei, C.I. and O'Keefe, S.F.: Preliminary studies on SDS-PAGE and isoelectric focusing identification of sturgeon sources of caviar. *J. Food Sci.*, 61 (1996) 533-535, 539; C.A., 125 (1996) 84917q.

See also 58, 275, 453, 850, 921.

35. ENVIRONMENTAL ANALYSIS

35a. *General papers and reviews*

- 897 McLaughlin, G.M., Weston, A. and Hauffe, K.D.: Capillary electrophoresis methods development and sensitivity enhancement strategies for the separation of industrial and environmental chemicals. *J. Chromatogr. A*, 744 (1996) 123-134.
- 898 Parry, S.M. and Simpson, C.F.: Application of capillary electrophoresis for environmental analysis. In: Subramanian, G. (Editor), *Qual. Assur. Environ. Monit.: Instrum. Methods*, VCH, Weinheim, 1995, pp. 213-265; C.A., 125 (1996) 157043p - a review with 171 refs.

35c. *Water pollution (complex mixtures; single compounds by cross-reference only)*

See 38, 845, 846, 916.

36. SOME TECHNICAL PRODUCTS AND COMPLEX MIXTURES

36a. *Surfactants*

- 899 Heinig, K., Vogt, C. and Werner, G.: Separation of ionic and neutral surfactants by capillary electrophoresis and high-performance liquid chromatography. *J. Chromatogr. A*, 745 (1996) 281-292.
- 900 Takeda, S., Wakida, S.-i., Yamane, M., Higashi, K. and Terabe, S.: Effect of alkyl chain length of sodium N-acyl sarcosinates on migration behavior in micellar electrokinetic chromatography. *J. Chromatogr. A*, 744 (1996) 135-139.
- 901 Wallingford, R.A.: Oligomeric separation of ionic and nonionic ethoxylated polymers by capillary gel electrophoresis. *Anal. Chem.*, 68 (1996) 2541-2548.

37. CELLS, CELLULAR PARTICLES AND SUPRAMOLECULAR STRUCTURES

- 902 Champigny, O. and Ricquier, D.: Evidence from *in vitro* differentiating cells that adrenoceptor agonists can increase uncoupling protein mRNA level in adipocytes of adult humans: an RT-PCR study. *J. Lipid Res.*, 37 (1996) 1907-1914.
- 903 Duerr, H., Hehnen, H.-R., Helbig, L., Correa, R. and Bruegge-meier, U.: (Method for the analytical separation of viruses). *Ger. Offen. DE 4,438,833* (Cl. C12Q1/70), 2 May 1996, Appl. 4,438,833, 31 Oct. 1994; 21 pp.; C.A., 125 (1996) 29595h.

- 904 Hymer, W.C., Salada, T., Cenci, R., Krishnan, K., Seaman, G.V.F., Snyder, R., Matsumiya, H. and Nagaoka, S.: Bioprocessing in microgravity: applications of continuous flow electrophoresis to rat anterior pituitary particles. *J. Biotechnol.*, 47 (1996) 353-365; C.A., 125 (1996) 242168c.
- 905 Janney, M.A.: A round-robin for particle electrophoresis standardization. In: Moudgil, B.M. and Somasundaran (Editors), *Dispersion Aggregation, Proc. Eng. Found Conf. 1992*, Engineering Foundation, New York, 1994, pp. 201-216; C.A., 124 (1996) 353322x - a review with 5 refs.
- 906 Shiomitsu, T., Manabe, Y., Ogawa, T., Takita, Y. and Ishihara, T.: Electrophoretic method for the formation of thin circonia films. *Eur. Pat. Appl. EP 713,931* (Cl. C25D13/02), 29 May 1996, JP Appl. 94/312,333, 24 Nov. 1994; 11 p.; C.A., 125 (1996) 93663f.
- 907 Tsukagoshi, K., Akasaka, H., Nakajima, R. and Hara, T.: Characterization of dyestuff-containing liposome by capillary zone electrophoresis using online chemiluminescence detection. *Chem. Lett.*, (1996) 467-468; C.A., 125 (1996) 81178p.

See also 18, 251, 833.

38. INORGANIC COMPOUNDS

38a. *Cations*

- 908 Billiet, H.A.H., Andersson, P.E. and Haddad, P.R.: Computer optimization of background electrolyte composition in the separation of metal ions by capillary electrophoresis. *Electrophoresis (Weinheim)*, 17 (1996) 1367-1372.
- 909 Conradi, S., Vogt, C., Wittrisch, H., Knobloch, G. and Werner, G.: Capillary electrophoretic separation of metal ions using complex forming equilibria of different stabilities. *J. Chromatogr. A*, 745 (1996) 103-109.
- 910 Fukushi, K. and Hiroy, K.: Determination of magnesium and calcium ions in seawater by capillary zone electrophoresis. *Fresenius J. Anal. Chem.*, 356 (1996) 150-154.
- 911 Havel, J., Janos, P. and Jandik, P.: Capillary electrophoretic estimation of sulfate stability constants of metal ions and determination of alkali and alkaline earth metals in waters. *J. Chromatogr. A*, 745 (1996) 127-134.
- 912 Ito, K. and Hirokawa, T.: Separation of alkali and alkaline-earth metal and ammonium cations by capillary electrophoresis using poly(ethylene glycol) and tartaric acid. *J. Chromatogr. A*, 742 (1996) 281-288.
- 913 Michalke, B. and Schramel, P.: Hyphenation of capillary electrophoresis to inductively coupled plasma mass spectrometry as an element-specific detection method for metal speciation. *J. Chromatogr. A*, 750 (1996) 51-62.
- 914 Oehrle, S.A.: Controlled changes in selectivity of cation separations by capillary electrophoresis using various crown-ether additives. *J. Chromatogr. A*, 745 (1996) 87-92.
- 915 Salimi-Moosavi, H. and Cassidy, R.M.: Control of separation selectivity and electroosmotic flow in nonaqueous capillary electrophoretic separations of alkali and alkaline earth metal ions. *J. Chromatogr. A*, 749 (1996) 279-286.

- 916 Tenberken, B., Ebert, P., Hartmann, M., Kibler, M., Mainka, A., Prokop, T., Röder, A. and Bächmann, K.: Analysis of single raindrops in the nl range by capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 209-215.
- 917 Walker, E.B., Walker, J.C., Zaugg, S.E. and Davidson, R.: Simultaneous analysis of selenate and selenite in bacterial suspensions by capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 111-115.
- 918 Xu, J., Che, P. and Ma, Y.: More sensitive way to determine iron using an iron(II)-1,10-phenanthroline complex and capillary electrophoresis. *J. Chromatogr. A*, 749 (1996) 287-294.
- See also 51, 73, 154, 282, 921.
- 38b. *Anions*
- 919 Chiari, M., Dell'Orto, N. and Casella, L.: Separation of organic acids by capillary zone electrophoresis in buffers containing divalent metal cations. *J. Chromatogr. A*, 745 (1996) 93-101.
- 920 Kawamura, Y., Takahashi, M., Arimura, G., Isayama, T., Irifune, K., Goshima, N. and Morikawa, H.: Determination of levels of NO_3^- , NO_2^- and NH_4^+ ions in leaves of various plants by capillary electrophoresis. *Plant Cell Physiol.*, 37 (1996) 878-880; *C.A.*, 125 (1996) 216977w.
- 921 Mopper, B.: Determination of cations and anions by capillary electrophoresis [in foods]. *Food Sci. Technol.*, 77(Handbook of Food Analysis, Vol. 2) (1996) 1867-1887; *C.A.*, 125 (1996) 219817e - a review with 172 refs.
- 922 Oehrlé, S.A.: Analysis of low-level anions in water extracts of hard disk drive heads by capillary electrophoresis. *J. Chromatogr. A*, 745 (1996) 81-85.
- 923 Takayanagi, T., Hiroi, Y. and Motomizu, S.: (Direct photometric detection of inorganic anions by capillary zone electrophoresis using stacking effect of sulphate ion on sample ions). *Bunseki Kagaku*, 45 (1996) 697-699; *C.A.*, 125 (1996) 95315t.
- 924 Ueda, T., Maekawa, T., Sadamitsu, D., Tsuruta, R. and Nakamura, K.: (The determination of nitrite and nitrate in human blood plasma by capillary electrophoresis). *Seibutsu Butsuri Kagaku*, 40 (1996) 175-181; *C.A.*, 125 (1996) 216021e.
- See also 38, 282.
39. RADIOACTIVE AND OTHER ISOTOPE COMPOUNDS
- See 629.