

Literaturverzeichnis

- Aflalo E, S Iftach, S Segal, A Gazit and E Priel 1994, Inhibition of topoisomerase I activity by tyrphostin derivatives, protein tyrosin kinase blockers: mechanism of action, *Cancer res.* 54, 5138-5142
- Alivisatos P, K Johnsson, X Peng, T Wilson, C Loweth M Bruchez and PG Schultz 1996, Organization of nanocrystal molecules using DNA, *Nature* 382, 609
- Arndt-Jovin DJ, A Udvardy MM Garner, S Ritter and TM Jovin 1993, Z-DNA-binding and inhibition by GTP of drosophila topoisomerase II, *Biochemistry* 32, 4862-4872
- Bates AD and A Maxwell 1993, *DNA Topology*, IRL, Oxford University Press, ISBN 0-19-963349-5
- Bauer WR and CJ Benham 1993, the free energy, enthalpy and entropy of native and of partially denatured closed circular DNA, *J. Mol. Biol.* 234, 1184-1196
- Bauer WR and J Vinograd 1968, The intercalation of closed circular DNA with intercalative dyes, *J. Mol. Biol.* 33, 141-171
- Benham CJ 1992, Energetics of the strand separation transition in superhelical DNA, *J. Mol. Biol.* 225, 835-847
- Bensimon A, AJ Simon, A Chiffaudel, V Croquette, F Heslot, D Bensimon 1994, Alignment and sensitive detection of DNA by a moving interface, *Science* 265, 2096-2097
- Bensimon D, AJ Simon, V Croquette, A Bensimon 1995, Stretching DNA with a receding Meniscus: Experiments and models, *Phys. Rev. Lett.* 74, 4754-4757
- Blackwood EM and JT Kadonaga 1998, Going the distance: A current view of enhancer action, *Science* 281, 60-62
- Bodnar JW 1988, A domain model for eukaryotic DNA organization: a molecular basis for cell differentiation and chromosome evolution, *J Theor Biol*, 132 479-507
- Bustamante, C., J. F. Marko, E. D. Siggia, and S. Smith, 1994, Entropic elasticity of lambda-phage DNA: *Science*, v. 265, p. 1599-1600.
- Champoux JJ 1981, *J. Biol. Chem* 256, 4805-09
- Champoux JJ 1990, Mechanistic Aspects of Topoisomerase I, in: *DNA Topology and its biological effects*, Cold Spring Harbour Press 1990
- Champoux JJ and R Dulbecco 1972, *Prc. Nat. Acad. Sci USA* 69, 143-146
- Chen HJ and J Hwang 1999, Binding of ATP to human DNA topoisomerase I resulting in an alteration of the conformation of the enzyme, *eur. J. Biochem* 265, 367-375

- Cheng C, P Kussie, N Pavlevitch and S Shuman 1998, Conservation of Structure and mechanism between eukaryotic topoisomerase I and site-specific recombinase, *Cell* 92, 841-850
- Cluzel P, A Lebrun, C Heller, R Lavery, JL Viovy, D Chatenay, F Caron 1996, DNA: an extensible molecule, *Science* 271, 792-794
- Cook PR 1999, The organization of replication and transcription, *Science* 284, 1790-1795.
- Cook PR and F Gove 1992, Transcription by an immobilized RNA polymerase from bacteriophage T7 and the topology of transcription, *Nucl. Acids Res.* 20, 3591-3598
- Cousteau 1965, Reacción de polymerase T4 inhibitada por estos hijos de estoripeces, *Esp. Sci. Mol. Marit.* 19, 301-98
- Cozzarelli NR, TC Boles and JH White 1990, Supercoiling topology and geometry, in Cozzarelli & Wang (Eds.), *DNA Topology and its Biological Effects*, Cold Spring Harbour Laboratory Press, ISBN 0-87969-3487
- Crick F 1976, Linking numbers and nucleosomes, *Proc. Natl. Acad. Sci. USA* 73, 2639-2643
- Darby MK, Vosberg HP 1985, Relaxation of supercoiled phosphorothioate DNA by mammalian topoisomerases is inhibited in a base-specific manner. *J Biol Chem* Apr 10 260:7 4501-7
- Depew RE and JC Wang 1975, Conformational fluctuations of DNA helix, *Proc. Nat. Acad. Sci. USA* 72, 4275-4279
- Dernburg AF, KW Broman, JC Fung, WF Marshall, J Philips, DA Agard and JW Sedat 1996, Perturbation of nuclear architecture by long-distance chromosome interactions, *Cell* 85, 745-759
- Dillon N and F Grosfeld 1993, Transcriptional control of multigene loci: multilevel control, *Trends Genet.* 9, 134-137
- Dinouel, Drissi, Miyikawa, Sor, Rousset and Fukuhara 1993, Linear Mitochondrial DNAs of Yeasts, *Mol. Cell. Biol.* 13, 2315-2323
- Doetsch PW, GL Chan and WA Haseltine 1985; T4 DNA polymerase (3'-5') exonuclease, an enzyme for the detection and quantitation of stable DNA lesions: the ultraviolet light example. *Nucleic Acids Res* 13, 3285-304
- Doktycz MJ, AS Benight and RD Sheardy 1990, Energetics of B-Z-junction formation in a sixteen base pair duplex DNA, *J. Mol. Biol.* 212, 3-6
- Dröge P and A Nordheim 1991, Transcription-induced conformational change in a topologically closed DNA domain, *Nucl. Acids Res.* 19, 2941-2946
- Dröge P and FM Pohl 1991, The influence of an alternate template conformation on elongating phage T7 polymerase, *Nucl. Acids Res.* 19, 5301-5306

- Drolett M, X Bi and LF Liu 1994, Hypernegative supercoiling of the DNA template during transcription elongation in vitro, *J. Biol. Chem.* 269, 2068-2074
- Dunaway M and EA Ostrander 1993, Local domains of supercoiling activate a eukaryotic promoter in vivo, *Nature* 361, 746-748
- D'Arpa P, C Beadmore and LF Liu 1990, Involvement of nucleic acid synthesis in cell killing mechanisms of topoisomerase poisons, *Cancer Res.* 50, 6919-24.
- Ellison MJ, RJ Kelleher, AH Wang, JF Habener and A Rich 1985, *Proc. Natl. Acad. Sci. USA* 82, 8320-8324
- Felsenfeld G, J Boyes, J chung, D Clark and Vasily Studitsky 1996, Chromatin structure and gene expression, *Proc. Natl. Acad. Sci. USA* 93, 9384-9388
- Felsenfeld, 1992, Chromatin as an essential part of the transcriptional mechanism, *Nature* 355, 219-224
- Fink T and Y Mao 1999, Designing tie knots by random walks, *Nature* 398, 32-33
- Florin, E. L., V. T. Moy, and H. E. Gaub, 1994, Adhesion forces between individual ligand-receptor pairs. *Science* 264, 415-417
- Francis GK 1987, *A Topological Picturebook*, Springer, ISBN 0-387-96426-6
- Frank-Kamenetskii MD 1990, DNA Supercoiling and unusual Structures, in Cozzarelli & Wang (Eds.), *DNA Topology and its Biological Effects*, Cold Spring Harbour Laboratory Press, ISBN 0-87969-3487
- Fujita K and J Silver 1993, Surprising lability of biotin-streptavidin bond during transcription of biotinylated DNA bound to paramagnetic streptavidin beads, *Biotechniques* 14, 608
- Gartenberg MR and JC Wang 1993, Identification of barriers to rotation of DNA segments in yeast from the topology of DNA rings excises by an inducible site-specific recombinase, *Proc. Natl. Acad. Sci. USA* 90, 10514-10518
- Gellibolian R, A Abcolla and RD Wells 1997, Triplet repeat instability and DNA topology: an expansion based on statistical mechanics, *J. Biol. Chem.* 272, 16793-16797
- Giaever GN and JC Wang 1988, Supercoiling of intracellular DNA can occur in eukaryotic cells, *Cell* 55, 849-856
- Glikin CC, TM Jovin and Arndt-Jovin DJ 1991, Interactions of drosophila DNA topoisomerase II with left handed Z-DNA in supercoiled microcircles, *Nucl. Acids res.* 19, 7139-7144.
- Gobert C, Skladanowski A and AK. Larsen 1999, The interaction between p53 and DNA topoisomerase I is regulated differently in cells with wild-type and mutant p53; *Proc. Natl. Acad. Sci. USA* Vol. 96, Issue 18, 10355-10360

- Grosfeld et. al. (1987), *Cell* 51, 975-985
- Grubmüller H, Heymann B, and Tavan P 1996, Ligand Binding: Molecular Mechanics Calculation of the Streptavidin-Biotin Rupture Force, *Science* 271, 997-999
- Gruskin EA and A Rich 1993, B-DNA to Z-DNA structural transition in the SV40 enhancer: Stabilization of Z-DNA in negatively supercoiled minicircles, *Biochemistry* 32, 2167-2176
- Haniford DB and DE Pulleyblank 1983, Facile transition of poly (TG)_n(CA)_n into a lefthanded helix in physiological conditions, *Nature* 302, 632-4
- Heisig-P, Kratz-B, Halle-E, Graser-Y, Altwegg-M, Rabsch-W, Faber-J-P 1995, Identification of DNA gyrase A mutations in ciprofloxacin-resistant isolates of *Salmonella typhimurium* from men and cattle in Germany. *Microb-Drug-Resist* 1, 211-8
- Herne TM and MJ Tarlov 1997, Characterization of DNA probes immobilized on gold surfaces, *J. Am. Chem. Soc.* 199, 8916-8920
- Hertzberg, RP, MJ Caranfa and SM Hecht 1989, On the mechanism of topoisomerase I inhibition by camptothecin; evidence for binding to an enzyme-DNA-complex, *Biochemistry* 28, 4629-4638
- Hippel, 1994, *Science* 263, 769-770
- Hippel, 1994, *Science* 263, 769-770
- Horowitz DS, JC Wang 1984, Torsional rigidity of DNA and length dependence of the free energy of supercoiling, *J. Mol. Biol.* 173, 75-91
- Hsiang YH and LF Liu 1988, Identification of mammalian DNA topoisomerase I as an intracellular target of the anticancer drug camptothecin, *Cancer Res.* 48, 1722-26
- Hsiang YH, MG Lihou and LF Liu 1988, Arrest of replication forks by drug-stabilized topoisomerase I-DNA cleavable complexes as a mechanism of cell killing by camptothecin, *Cancer Res.* 49, 5077-82
- Hsiang YH, R Hertzberg, S Hecht and LF Liu 1985, Camptothecin induces protein-linked DNA breaks via mammalian topoisomerase I, *J. Biol. Chem.* 260, 14873-14878
- Ikeda RA, AC Lin and J Clarke 1992, Initiation of transcription by T7 RNA polymerase at its natural promoter, *J. Biol. Chem.* 267, 2640-2649
- Jaxel C, G Capranico, D Kerrigan KW Kohn and Y Pommier 1991, Effect of local DNA sequence on topoisomerase cleavage in the presence or absence of camptothecin, *J. Biol. Chem.* 266, 20418-20423
- Junghans C, M Schroff und B Wittig (1999), EPA 99250187.4 14.06.1999

- Jupe ER, RR Sinden and IL Cartwright 1995, Specialized chromatin structure domain boundary elements flanking a *Drosophila* heat shock gene locus are under torsional strain in vivo, *Biochemistry* 34, 2628-2633
- Kelleher RJ, MJ Ellison, PS Ho and A Rich 1986, Competitive Behaviour of multiple, discrete B-Z transitions in supercoiled DNA
- Kellum & Schedl (1991), *Cell* 65, 941-950; 1992, *Mol Cell Biol* 12, 2424-2431
- Koehler DR, Hanawalt PC 1993, Digestion of damaged DNA by the T7 DNA polymerase-exonuclease, *Biochem J* 293, 451-3
- Kovalenko M, A Gazit, A böhmer, C Rorsman, L Rönstrand, c Heldin, J Waltenberger, FD Böhmer and A Levitzki 1994, Selective Platelet-Derived Growth Factor Receptor Kinase Blockers Reverse sis-Transformation, *Cancer Res.* 54, 6106-6114
- Kretzschmar M, M Meisterernst and RG Roeder 1993; Identification of human DNA topoisomerase I as a cofactor for activator-dependent transcription by RNA polymerase II. *Proc Natl Acad Sci U S A* 90, 11508-12
- Laemmli et al. 1992, *Curr. Opin. Genet. Dev.* 2, 275-285
- Lafer E, A Möller, A Nordheim, D Stollar and A Rich 1981, Antibodies specific for left-handed Z-DNA, *Proc. Natl. Acad. Sci. USA* 78, 3546-3550
- Lafer E, R Sousa and A Rich 1985, Anti-Z-DNA antibody binding can stabilize Z-DNA in relaxed and linear plasmids under physiological conditions, *EMBO J.* 4, 3655-3660
- Lanza A, S Tornaletti, C Rodolfo, MC Scanavini and AM Pedrini 1996, Human DNA topoisomerase I-mediated cleavages stimulated by Ultraviolet light-induced damage, *J.Biol.Chem.* 271, 6978-6986
- Liu LF and JC Wang 1987, Supercoiling of the DNA template during transcription, *Proc. Natl.Acad.Sci.USA*, 84, 7024-7027
- Lund V, R Schmid, D Rickwood and E Hornes 1988, Assesment of methods for covalent binding of nucleic acids to magnetic beads, *Nuc. Acids Res.* 16
- Madden KR, L Stewart and JJ Champux 1995, Preferential Binding of human topoisomerase I to superhelical DNA, *EMBO J.* 14, 5399-5409
- Mao C, W Sun, Z Shen and ND Seeman 1999, A nanomechanical device based on the B-Z transition of DNA, *Nature* 397, 144-146
- Menzel R and M Gellert 1987, Modulation of transcription by DNA supercoiling: a deletion analysis of the *escherichia coli* gyr A and gyr B promoters, *Proc. Natl. Acad. Sci. USA* 84, 4185-4189

- Merino A., KR Madden, WS Lane, JJ Champoux & D Reinberg (1993); *Nature (London)* 363, 227-232
- Mirkin C, R Letsinger, R Mucic, J Storhoff 1996, A DNA-based method for rationally assembling nanoparticles into macroscopic materials, *Nature* 382, 607-609
- Mizumoto K, RJ Rothman and JL farber 1994, Programmed cell death (apoptosis) of mouse fibroblasts is induced by the topoisomerase inhibitor etoposide; *Mol. Pharmacol.* 46, 890-5
- Möller A, A Rich and D Stollar, 1982, Monoclonal antibodies recognize different parts of Z-DNA, *J. Biol. Chem.* 20, 12081-12085
- Moy, V. T., E. L. Florin, and H. E. Gaub 1994, Intermolecular forces and energies between ligands and Science 266, 257-259
- Muller MT 1985, Quantitation of eukaryotic topoisomerase I reactivity with DNA. Preferential cleavage of supercoiled DNA. *Biochim Biophys Acta* 824, 263-267.
- Murchie AIH, R Bowater, F Aboul-Ela, DMJ Lilley 1992, Helix opening transitions in supercoiled DNA, *Biochem Biophys. Acta* 1131, 1-15
- Nordheim A, ML Pardue, LM Weiner, K Lowenhaupt, P Scholten, A Möller, A Rich and BD Stollar 1985, Analysis of Z-DNA in Fixed Polytene Chromosomes with monoclonal antibodies that show base sequence selectivity in reactions with supercoiled plasmids and polynucleotides, *J.Biol.Chem.* 261, 468-476
- Ostrander EA, P Benedetti and JC Wang 1990, Template supercoiling by a chimera of yeast GAL4 Protein and phage T7 RNA polymerase, *Science* 249, 1261-1265
- Parvin JD and PA Sharp 1993, DNA topology and a minimal set of basal factors for transcription by RNA polymerase II, *Cell* 73, 533-540
- Parvin JD, RJ McCormick, PA Sharp and DE Fisher 1995, Pre-bending of a promoter sequence enhances affinity for the TATA-binding factor, *Nature* 373, 724-727
- Peck LJ, JC Wang 1983, energetics of B-toZ transition in DNA, *Proc. Nat. Acad. Sci. USA* 80, 6206-6210
- Perkins TT, DE Smith, S Chu 1994, Direct observation of tube-like motion of a single polymer chain, *Science* 264, 819-826
- Porter SE and JJ Champoux 1989, The basis for camptothecin enhancement of DNA breakage by eukaryotic topoisomerase I, *Nucl. Acids. Res.* 17, 8521-8532
- Raskin CA, G Diaz, K Joho and WT McAllister 1992, Substitution of a single bacteriophage T 3 residue in bacteriophage T7 RNA polymerase at position 748 results in a switch in promoter activity, *J. Mol. Biol.* 228, 506-515

- Rastinejade et al. 1995, Structural determinants of nuclear receptor assembly on DNA direct repeats, *Nature* 375, 203-211
- Redinbo MR, L Stewart, P Kuhn, JJ Champoux and WGJ Holt 1998, Crystal structure of human DNA topoisomerase I in covalent and noncovalent complexes with DNA, *Science* 279, 1504-1513
- Rentzeperis D, K Alessi and LA Marky 1993, Thermodynamics of DNA hairpins: contribution of loop size to hairpin stability and ethidium binding, *Nuc. Acids Res.* 21, 2683-2689
- Rich A, A Nordheim and AHJ Wang 1984, The chemistry and biology of left handed Z-DNA, *Ann. rev. Biochem.* 53, 791-846
- Rossi F, Labourier E, Forne T, Divita G, Derancourt J, Riou JF, Antoine E, Cathala G, Brunel C, Tazi J 1996, Specific phosphorylation of SR proteins by mammalian DNA topoisomerase I. *Nature* 381, 80-2
- Sanford D and D Stollar 1990, Charakterization of Anti-Z-DNA Antibody binding sites on Z-DNA by Nuclear Magnetic Resonance Spectroscopy, *J. Biol. Chem.* 265, 18608-18614
- Schafer D, J Gelles, MP Sheetz and R Landick 1991, Transkription by single molecules of RNA polymerase observed by light microscopy, *Nature* 352, 444-448
- Schöneberg, U., Vahrson, W., Priedemuth, U. und Wittig, B. (1993). *Analysis and Interpretation of DNA and Protein Sequences Using MacMolly Tetra®*. Bielefeld, KAROI-Verlag
- Schwartz T; MA Rould, K Lowenhaupt A Herbert and A Rich 1999, Crystal Structure of the Z alpha Domain of the human Editing Enzyme ADAR1 Bound to left Handed Z-DNA, *Science* 284, 1841-1845
- Sen S and R Manjumdar 1987, Thermodynamics of B-Z transition in supercoiled DNA, *Nucl. Acids Res.* 15, 5863-5871
- Sheridan SD, CJ Benham and GW Hatfield 1999, Inhibition of DNA Supercoiling-dependent Transcriptional Activation by a distant B-DNA to Z-DNA transition
- Sinden RR 1994, *DNA structure and function*, Academic Press, ISBN 0-12-645750-6
- Singleton CK and RD Wells 1982, Facile generation of covalently closed, circular DNAs with defined negative superhelical densities, *Anal. Biochemistry* 122, 253-257
- Smith S. B., L. Finzi and C. Bustamante, 1992, Direct mechanical measurements of the elasticity of single dna molecules by using magnetic beads: *Science*, v. 258, p. 1122.
- Smith SB, Y Cui, C Bustamante 1996, Overstretching B-DNA: The Elastic Response of Individual Double-Stranded and Single-Stranded DNA Molecules, *Science* 271, 795-799
- Stewart L, MR Redinbo, X Qiu, WGJ Hol and JJ Champoux 1999, A Model for the mechanism of human topoisomerase I, *Science* 279, 1534-1541

- Stivers 1994, *Biochemistry* 33, 327-39
- Strumberg D, JL Nittis, J Dong, KW Kohn and Y Pommier 1999, Molecular analysis of yeast and human topoisomerases, *J. Biol. Chem.* 240, 28246-28255
- Stryer L 1988, *Biochemistry*, W:H: Freeman, NewYork; ISBN 0-7167-1920-7
- Subramanian D, Rosenstein BS, Muller MT 1998, Ultraviolet-induced DNA damage stimulates topoisomerase I-DNA complex formation in vivo: possible relationship with DNA repair. *Cancer Res* 58,976-84
- Tanizawa A, KW Kohn, G Kohlhagen F Leteurtre and Y Pommier 1995, Differential stabilization of eukaryotic DNA topoisomerase I cleavable complexes by camptothecin derivatives, *Biochemistry* 34, 7200-7206
- Tazi J, F Rossi, E Labourier, I Gallouzi, C Brunel and E Antoine 1997 DNA topoisomerase I: customs officer at the border between DNA and RNA worlds? *J Mol Med* 75, 786-800
- ten Heggeler Bordier B., W. Wahli, M. Adrian, A. Stasiak, and J. Dubochet, 1992, The apical localization of transcribing RNA polymerases on supercoiled DNA prevents their rotation around the template: *Embo J*, v. 11, p. 667-72.
- Thompson CC and SL McKnight 1992, Anatomy of an enhancer, *Trends Genet.* (), 232-236
- Travers AA and A klug, Bending of DNA in nucleoprotein complexes, in Cozzarelli & Wang (Eds.), *DNA Topology and its Biological Effects*, Cold Spring Harbour Laboratory Press, ISBN 0-87969-3487
- Tsao YP, HY Wu and LF Liu 1989, Transcription-driven supercoiling of DNA: Direct biochemical evidence from in vitro studies, *Cell* 56, 111-118
- Tse YC, K Kierkegaard and JC Wang 1980, *J. Biol. Chem.* 255, 5560-65
- Turgay K, Marahiel MA 1992, A general approach for identifying and cloning peptide synthetase genes. *Pept Res* 1994 Sep-Oct 7:5 238-41
- Vologodskii AV, SD Levene, KV Klenin, M Frank-Kamenetskii, NR Cozzarelli 1992, Conformational and thermodynamic properties of supercoiled DNA, *J. Mol. Biol.* 227, 1224-1243
- Waga S, S Mizuno and M Yoshida 1990, Chromosomal Protein HMG1 removes the transcriptional block caused by the cruciform in supercoiled DNA, *J. Biol. Chem* 265, 19424-19428
- Wang JC 1971, *J. Mol. Biol.* 55, 523-533
- Wang JC 1974, The degree of unwinding of the DNA helix by ethidium, *J. Mol. Biol.* 89, 783-801
- Wang JC 1996, DNA Topoisomerases; *Ann. Rev. Biochem.* 65, 635-692
- Wang JC and Lynch 1993, Transcription and DNA supercoiling, *Current Biol.* 3, 764-768

- Watson J and F Crick, 1953, *Nature* 171, 737-738
- Weber PC, DH Ohlendorf, JJ Wendoloski and FR Salemme 1989, Structural origins of high-affinity biotin binding to streptavidin, *Science* 243, 85-88
- Werner MH, AM Gronenborn and GM Clore 1996, Intercalation, DNA kinking and the control of transcription, *Science* 271, 778-783
- Wittig B, T Dorbic and A Rich 1989, The level of Z-DNA in metabolically active, permeabilized mammalian cell nuclei is regulated by torsional strain, *J. Cell Biol.* 108, 755-764
- Wittig B, T Dorbic und A Rich, Measurement of Left-handed Z-DNA in permeabilized, metabolically active mammalian nuclei, 1990; *Structure and Methods, Vol.2*; Edts Ramaswamy and Sarma, Adenine Press
- Wittig S and B Wittig 1979, A phase relationship associates tRNA structural gene sequences with nucleosome cores, *Cell* 18, 1173-1183
- Wittig S and B Wittig 1982, Function of a tRNA gene promoter depends on nucleosome position, *Nature* 297, 31-38
- Wolffe (1994) Insulating chromatin, *Current biology* 4, 85-87
- Wolffe 1994, Transcription: in tune with the histones, *Cell* 77, 13-16
- Wölfel S, B Wittig and A Rich 1995, Identification of transcriptionally induced Z-DNA segments in the human c-myc-gene, *Biochim. Biophys. Acta* 92819
- Wu HY, S Shyy, JC Wang and HF Liu 1988, Transcription generates positively and negatively supercoiled domains in the template, *Cell* 53, 433-440
- Yeh YC, HF Liu, CA Ellis and AL Lu 1994, Mammalian topoisomerase I has base mismatch nicking activity, *J. Biol. Chem.*, Vol. 269, 15498-15504
- Zechiedrich EL and N Osherhoff 1990, Eukaryotic topoisomerases recognize nucleic acid topology by preferentially interacting with DNA crossovers, *EMBO J.* 9, 4555-4562
- Zhao, Hart & Laemmli 1995, *Cell* 81, 879-889
- Zuckerkindl 1997, Junk DNA and sectorial gene repression, *Gene* 205, 323-43