

8. Referenzen

8.1 Literaturzitate

- Abel K. & Jurnak F. 1996. A complex profile of protein elongation: translating chemical energy into molecular movement. *Structure* 4:229-238
- AgaisseHervé & Lereclus D. 1996. STAB-SD: a Shine-Dalgarno sequence in the 5' untranslated region is a determinant of mRNA stability. *Mol. Microbiol.* 20:633-643
- Aiba H., Hanamura, A. & Yamano, H. 1991. Transcriptional terminator is a positive regulatory element in the expression of the *Escherichia coli crp* gene. *J. Biol. Chem.* 266:1721-1727
- Anderson J.S. & Parker R. 1996. RNA turnover: the helicase story unwinds. *Curr. Biol.* 6:780-782
- Andrews B., Adari H., Hannig G., Lahue E., Gosselin M., Martin S., Ahmed A., Ford P. J., Hayman E. G. & Makrides S. C. A tightly regulated high level expression vector that utilizes a thermosensitive lac repressor: production of the human T cell receptor Vb5.3 in *Escherichia coli*. *Gene*. 1996 182:101-109
- Arber W. & Linn S. 1969. DNA modification and restriction. *Annu. Rev. Biochem.* 38:467-500
- Arnold T.E., Yu J. & Belasco J.G. 1998. mRNA stabilization by the *ompA* 5' untranslated region: Two protective elements hinder distinct pathways for mRNA degradation. *RNA* 4:319-330
- Atkins J.F., Weiss R.B. & Gesteland R.F. 1990. Ribosome gymnastics--degree of difficulty 9.5, style 10.0. *Cell*. 62:413-423
- Bain J.D., Switzer C., Benner S.A. & Chamberlin A.R. 1992. Ribosome-mediated incorporation of a non-standard amino acid into a peptide through expansion of the genetic code. *Nature* 356:537-539
- Bald R., Brumm K., Buchholz B., Fürste J.P., Hartmann R.K., Jäschke A., Kretschmer-Kazemi Far R., Lorenz S., Raderschall E., Schlegel J., Specht T., Zhang M., Cech D. & Erdman V.A. 1992. New possibilities in RNA research through RNA engineering. 449-466. In „Structural tools for the analysis of protein-nucleic acid complexes. Lilley D., Heumann H. & Suck D. Birkhäuser Verlag, Basel, Schweiz
- Baranov V.I., Morozow I.Y., Ortlepp S.A. & Spirin A.S. 1989. Preparative gene expression in a cell-free system. *Gene* 84:463-466
- Bardwell J.C.A., Regnier P., Chen S.M., Nakamura Y., Grunberg-Manago M. & Court D. 1989. Autoregulation of RNase III operon by mRNA processing. *EMBO J.* 8:3401-3407
- Baumeister R., Flache P., Melefors O. von Gabain A. & Hillen W. 1991. Lack of a 5' non-coding region in *Tn1721* encoded *tetR* mRNA is associated with low efficiency of translation and a short half-life in *Escherichia coli*. *Nucleic Acids Res.* 19:4595-4600
- Bechhofer D. 1993. in: "Control of Messenger RNA Stability", 31-52, Belasco J.G. & Brawerman G., Academic Press, Inc., ISBN 0-12-084782-5
- Belasco J.G., Nilsson G., von Gabain A. & Cohen S.N. 1986. The stability of *E. coli* gene transcripts is dependent on determinants localized to specific mRNA segments. *Cell* 46:245-251
- Belasco, J. G. 1993. mRNA degradation in prokaryotic cells: an overview. In: "Control of messenger RNA stability", 3-12 Belasco J. G. & Brawerman G., Academic Press, Inc., ISBN 0-12-084782-5
- Billich S., Wissel T., Kratzin H., Hahn U., Hagenhoff B., Lezius A.G. & Spener F. 1988. Cloning of a full-length complementary DNA for fatty-acid-binding protein from bovine heart. *Eur. J. Biochem.* 175:549-556
- Bird L.E., Subramanya H.S. & Wigley D.B. 1998. Helicases: a unifying structural theme? *Curr. Opin. Struct. Biol.* 8:14-18
- Birikh K. R., Lebedenko E. N., Boni I. V. & Berlin Y. A. 1995. A high-level prokaryotic expression system: synthesis of human interleukin 1a and its receptor antagonist. *Gene* 164:341–345
- Björnsson A., Mottagui-Tabar S. & Isaksson L. A. 1996. Structure of the C-terminal end of the nascent peptide influences translation termination. *EMBO J.* 15:1696-1704

- Bjornsson A., Mottagui-Tabar S. & Isaksson L.A. 1996. Structure of the C-terminal end of the nascent peptide influences translation termination. *EMBO J.* 15:1696-1704.
- Blomberg P., Wagner E.G.H. & Nordström K. 1990. Control of replication of plasmid R1: the duplex between the antisense RNA, CopA, and its target, CopT, is processed specifically *in vivo* and *in vitro* by RNase III. *EMBO J.* 9:2331-2340
- Blum E., Py B., Carpousis A.J. & Higgins C.F. 1997. Polyphosphate kinase is a component of the *Escherichia coli* RNA degradosome. *Mol. Microbiol.* 26:387-398
- Boni I. V., Isaeva D. M., Musychenko M. L. & Tzareva N. V. 1991. Ribosome-messenger recognition: mRNA target sites for ribosomal protein S1. *Nucleic Acids Res.* 19:155-162
- Bouvet P. & Belasco J.G. 1992. Control of RNase E-mediated RNA degradation by 5'-terminal base pairing in *E. coli*. *Nature* 360:488-491
- Brawerman G. 1987. Determinants of messenger RNA stability. *Cell* 48:5-6
- Brawerman G. 1993 in "Control of messenger RNA stability", 149-159, Belasco J.G. & Brawerman G., Academic Press, Inc., ISBN 0-12-084782-5
- Brenner S., Jacob F. & Meselson M. 1961. An unstable intermediate carrying information from genes to ribosomes for protein synthesis. *Nature* 190:576-581
- Brinkmann U., Mattes R.E. & Buckel P. 1989. High-level expression of recombinant genes in *Escherichia coli* is dependent on the availability of the dnaY gene product. *Gene* 85:109-114.
- Brosius J., Dull T.J. & Noller H.F. 1980. Complete nucleotide sequence of a 23S ribosomal RNA gene from *Escherichia coli*. *Proc. Natl. Acad. Sci.* 77:201-204
- Brosius J., Palmer M.L., Kennedy P.L. & Noller H.F. 1978. Complete nucleotide sequence of a 16S ribosomal RNA gene from *Escherichia coli*. *Proc. Natl. Acad. Sci.* 75:4801-4805
- Brownlee G.G., Sanger F. & Barrell B.G. 1968. The sequence of 5 s ribosomal ribonucleic acid. *J. Mol. Biol.* 34:379-412
- Brucolieri R. & Heinrich G. 1988. An improved algorithm for nucleic acid secondary structure display. *Comput. Appl. Biosci.* 4:167-173
- Cannistraro V.J. & Kennell D. 1991. RNase I*, a form of RNase I, and mRNA degradation in *Escherichia coli*. *J. Bacteriol.* 173:4653-4659
- Cannistraro V.J. & Kennell D. 1994. The processive reaction mechanism of ribonuclease II. *J. Mol. Biol.* 243:930-943
- Cantrell A.S., Burgett S.G., Cook J.A., Smith M.C., Hsiung H.M. 1991. Effects of second-codon mutations on expression of the insulin-like growth factor-II-encoding gene in *Escherichia coli*. *Gene* 98:217-223
- Cao G.J. & Sarkar N. 1992. Identification of the gene for an *Escherichia coli* poly(A) polymerase. *Proc. Natl. Acad. Sci.* 89:10380-10384
- Carbon P., Ehresmann P., Ehresmann B. & Ebel J.P. 1978. The sequence of *Escherichia coli* ribosomal 16 S RNA determined by new rapid gel methods. *FEBS Lett.* 94:152-156
- Carpousis A.J., Van Houwe G., Ehretsmann C. & Krisch H.M. 1994. Copurification of *E. coli* RNase E and PNPase: evidence for a specific association between two enzymes important in RNA processing and degradation. *Cell* 76:889-900
- Case C.C., Simons E.L. & Simons R.W. 1990. The IS10 transposase mRNA is destabilized during antisense RNA control. *EMBO J.* 9:1259-1266
- Causton H., Py B., McLaren R.S. & Higgins C.F. 1994. mRNA degradation in *Escherichia coli*: a novel factor which impedes the exoribonucleolytic activity of PNPase at stem-loop structures. *Mol. Microbiol.* 14:731-741
- Chaconas G. & van de Sande J.H. 1980. 5'-32P labeling of RNA and DNA restriction fragments. *Methods Enzymol.* 65:75-85
- Chen C.-Y.A. & Belasco J. G. 1990. Degradation of *pufLMX* mRNA in *Rhodobacter capsulatus* is initiated by nonrandom endonucleolytic cleavage. *J. Bacteriol.* 172:4578-4586

- Chen C.-Y.A., Beatty J. T., Cohen S. N. & Belasco J. G. 1988. An intercistronic stem-loop structure functions as an mRNA decay terminator necessary but insufficient for *puf* mRNA stability. *Cell* 52:609–619
- Chen G.F. & Inouye M. 1990. Suppression of the negative effect of minor arginine codons on gene expression: preferential usage of minor codons within the first 25 codons of the *Escherichia coli* genes. *Nucleic Acids Res.* 18:1465-1473
- Chen H., Bjerknes M., Kumar R. & Jay E. 1994. Determination of the optimal aligned spacing between the Shine-Dalgarno sequence and the translation initiation codon of *Escherichia coli* mRNAs. *Nucleic Acids Res.* 22:4953-4957
- Chevrier-Miller M., Jacques N., Raibaud O. & Dreyfus M. 1990. Transcription of single-copy hybrid *lacZ* genes by T7 RNA polymerase in *Escherichia coli*: mRNA synthesis and degradation can be uncoupled from translation. *Nucleic Acids Res.* 18:5787-5792
- Chow J. & Dennis P.P. 1994. Coupling between mRNA synthesis and mRNA stability in *Escherichia coli*. *Mol. Microbiol.* 11:919-931
- Coburn G.A. & Mackie G.A. 1996 Overexpression, purification, and properties of *Escherichia coli* ribonuclease II. *J. Biol. Chem.* 271:1048-1053
- Cohen S.N. 1995. Surprises at the 3' end of prokaryotic RNA. *Cell* 80:829-832
- Cohen S.N., Chang A.C. & Hsu L. 1972. Nonchromosomal antibiotic resistance in bacteria: genetic transformation of *Escherichia coli* by R-factor DNA. *Proc. Natl. Acad. Sci.* 69:2110-2114
- Cole J.R. & Nomura M. 1986. Changes in the half-life of ribosomal protein messenger RNA caused by translational repression. *J. Mol. Biol.* 188:383-392
- Cormack R.S. & Mackie G.A. 1992. Structural requirements for the processing of *Escherichia coli* 5S ribosomal RNA by RNase E *in vitro*. *J. Mol. Biol.* 228:1078-1090
- Cornish V.W., Benson D.R., Altenbach C.A., Hideg K., Hubbell W.L. & Schultz P.G. 1994. Site-specific incorporation of biophysical probes into proteins. *Proc. Natl. Acad. Sci.* 91:2910-2915
- de Boer H. A. & Kastelein R. A. 1986. Biased codon usage: an exploration of its role in optimization of translation. In: Maximizing gene expression. 225–285. Reznikoff W. S. and Gold L. Boston, MA: Butterworth
- de Smit M.H. & van Duin J. 1994. Control of Translation by mRNA Secondary Structure in *Escherichia coli*. A Quantitative Analysis of Literature Data. *J. Mol. Biol.* 244:144-150
- De Vries J.K. & Zubay G. 1967. DNA-directed peptide synthesis. II. The synthesis of the alpha-fragment of the enzyme beta-galactosidase. *Proc. Natl. Acad. Sci.* 57:1010-1012
- Del Tito B. J., Ward Jr., J. M., Hodgson J., Gershater C. J. L., Edwards H., Wysocki L. A., Watson F. A., Sathe G. & Kane J. F. 1995. Effects of a minor isoleucyl tRNA on heterologous protein translation in *Escherichia coli*. *J. Bacteriol.* 177:7086-7091
- Deutscher M.P. & Reuven N.B. 1991. Enzymatic basis for hydrolytic versus phosphorolytic mRNA degradation in *Escherichia coli* and *Bacillus subtilis*. *Proc. Natl. Acad. Sci.* 88:3277-3280
- Deutscher M.P. 1985. *E. coli* RNases: making sense of alphabet soup. *Cell* 40:731-732
- Deutscher M.P. 1993. Ribonuclease multiplicity, diversity, and complexity. *J. Biol. Chem.* 268:13011-13014
- Dunn J.J. & Studier F.W. 1983. Complete nucleotide sequence of bacteriophage T7 DNA and the locations of T7 genetic elements. *J. Mol. Biol.* 166:477-535
- Ehretsmann C.P., Carpousis A.J. & Krisch H.M. 1992. Specificity of *Escherichia coli* endoribonuclease RNase E: *in vivo* and *in vitro* analysis of mutants in a bacteriophage T4 mRNA processing site. *Genes Dev.* 6:149-159
- Emory S.A. & Belasco J.G. 1990. The *ompA* 5' untranslated RNA segment functions in *Escherichia coli* as a growth-rate-regulated mRNA stabilizer whose activity is unrelated to translational efficiency. *J. Bacteriol.* 172:4472-4481
- Erdmann V.A., Fuchs U. & Stiege W. 1994. Biotech 2000 57-70
- Erdmann V.A., Huysmans E., Vandenberghe A. & de Wachter R. 1983. Collection of published 5S and 5.8S ribosomal RNA sequences. *Nucl. Acids Res.* 11:105-133

- Erdmann V.A., Stiege W., Henze P.P. & Ulbrich N. 1989. in: "Tharmacological Interventions on Central Cholinergic Mechanisms in Senile Dementia", 45-54 W. Zuckschwerdt Verlag, München
- Ernst J. F. & Kawashima E. 1988. Variations in codon usage are not correlated with heterologous gene expression in *Saccharomyces cerevisiae* and *Escherichia coli*. *J. Biotechnol.* 7:1–9
- Fargo D.C., Zhang M., Gillham N.W. & Boynton J.E. 1998. Shine-Dalgarno-like sequences are not required for translation of chloroplast mRNAs in *Chlamydomonas reinhardtii* chloroplasts or in *Escherichia coli*. *Mol. Gen. Genet.* 257:271–282
- Freier S.M., Kiezerk R., Jaeger J.A., Sugimoto N., Caruthers M.H., Nelson T. & Turner D.H. 1986. Improved free-energy parameters for predictions of RNA duplex stability. *Proc. Natl. Acad. Sci.* 83:9373–9377
- Fuchs U., Stiege W. & Erdmann V.A. 1997. Ribonucleolytic activities in the *Escherichia coli* in vitro translation system and its separate components. *FEBS Lett.* 414:362–364
- Fuchs U. 1997. Steigerung der Effizienz des *Escherichia coli* in vitro-Translationssystems durch die Stabilisierung von messenger RNA-Molekülen. Dissertation, Fachbereich Chemie der Freien Universität Berlin
- Garcia G. M., Mar P. K., Mullin D. A., Walker J. R. & Prather N. E. 1986. The *E. coli dnaY* gene encodes an arginine transfer RNA. *Cell* 45:453–459
- Georgellis D., Sohlberg B., Hartl F.U. & von Gabain A. 1995. Identification of GroEL as a constituent of an mRNA-protection complex in *Escherichia coli*. *Mol. Microbiol.* 16:1259–1268
- Gerrits M. 2001 Funktion und Effizienz von *amber*-Suppressor-tRNAs in der zellfreien Proteinbiosynthese. Inaugural Dissertation im Fachbereich Biologie, Chemie, Pharmazie der Freien Universität Berlin (eingereicht)
- Gheysen D., Iserentant D., Derom C. & Fiers W. 1982. Systematic alteration of the nucleotide sequence preceding the translation initiation codon and the effects on bacterial expression of the cloned SV40 small-t antigen gene. *Gene* 17:55–63
- Gold L., Pribnow D., Schneider T., Shinedling S., Swebilius Singer B. & Stormo G. 1981. Translational initiation in prokaryotes. *Annu. Rev. Microbiol.* 35: 365–403
- Gold L.M. & Schweiger M. 1969. Synthesis of phage-specific alpha- and beta-glucosyl transferases directed by T-even DNA *in vitro*. *Proc. Natl. Acad. Sci.* 62:892–898
- Goldman E., Rosenberg A. H., Zubay G., and Studier F. W. 1995. Consecutive low-usage leucine codons block translation only when near the 5' end of a message in *Escherichia coli*. *J. Mol. Biol.* 245:467–473
- Gonzalez R.G., Blackburn B.J. & Schleich T. 1979. Fractionation and structural elucidation of the active components of aurintricarboxylic acid, a potent inhibitor of protein nucleic acid interactions. *Biochim. Biophys. Acta* 562:534–545
- Gonzalez R.G., Haxo R.S. & Schleich T. 1980. Mechanism of action of polymeric aurintricarboxylic acid, a potent inhibitor of protein-nucleic acid interactions. *Biochemistry* 19:4299–4303
- Gouy M. & Gautier C. 1982. Codon usage in bacteria: correlation with gene expressivity. *Nucleic Acids Res.* 10:7055–7074
- Gren E. J. 1984. Recognition of messenger RNA during translational initiation in *Escherichia coli*. *Biochimie* 66:1–29
- Gros F., Hiatt H., Gilbert W., Kurland C. G., Risebrough R. W. & Watson J. D. 1961. Unstable ribonucleic acid revealed by pulse labelling of *Escherichia coli*. *Nature* 190:581–585
- Gualerzi C. O. & Pon C. L. 1990. Initiation of mRNA translation in prokaryotes. *Biochemistry* 29:5881–5889
- Gutman G. A. & Hatfield G. W. 1989. Nonrandom utilization of codon pairs in *Escherichia coli*. *Proc. Natl. Acad. Sci. USA* 86:3699–3703
- Hallick R.B., Chelm B.K., Gray P.W. & Orozco E.M. Jr. 1977. Use of aurintricarboxylic acid as an inhibitor of nucleases during nucleic acid isolation. *Nucleic Acids Res.* 4:3055–3064
- Hanes J. & Plückthun A. 1997. In vitro selection and evolution of functional proteins by using ribosome display. *Proc. Natl. Acad. Sci.* 94:4937–4942

- Hartz D., McPheeters D.S. & Gold L. 1991. Influence of mRNA determinants on translation initiation in *Escherichia coli*. J. Mol. Biol. 218:83-97
- Haukanas B.-I. & Kvam C. 1993. Application of magnetic beads in bioassays. Bio/Technology 11:60-63
- He L. 1991. Biochemistry 30:11124 He L., Kierzek R., SantaLucia J. Jr., Walter A.E. & Turner D.H. Nearest-neighbor parameters for G.U mismatches: [formula; see text] is destabilizing in the contexts [formula; see text] and [formula; see text] but stabilizing in [formula; see text]. Biochemistry 1991 Nov 19 30:46 11124-32
- He M. & Taussig M.J. 1997. Antibody-ribosome-mRNA (ARM) complexes as efficient selection particles for in vitro display and evolution of antibody combining sites. Nucleic Acids Res. 25:5132-5134
- Helling R.B., Goodman H.M. & Boyer H.W. 1974. Analysis of endonuclease R-EcoRI fragments of DNA from lambdoid bacteriophages and other viruses by agarose-gel electrophoresis. J. Virol. 14:1235-1244
- Henkel T. & Baeuerle P.A. 1993. Functional analysis of mutated cDNA clones by direct use of PCR products in *in vitro* transcription/translation reactions. Anal. Biochem. 214:351-352
- Herrlich P. & Schweiger M. 1974. DNA- and RNA-directed synthesis *in vitro* of phage enzymes. Methods Enzymol. 30:654-669
- Higgins C.F. Causton H.C., Dance G.S. & Mudd E.A. 1993. in: "Control of Messenger RNA Stability", 13-30, Belasco J.G. & Brawerman G. Academic Press, Inc., ISBN 0-12-084782-5
- Hochuli E., Döbeli H. & Schacher A. 1987. New metal chelate adsorbents selective for proteins and peptides containing neighbouring histidine residues. J. Chromatogr. 411:177-184
- Hofacker I.L., Fontana W., Stadler P.F., Bonhoeffer L.S., Tacker M. & Schuster P. 1994. .Chemical Monthly 125:167-188
- Huh K. R., Cho E. H., Lee S. O & Na D. S. 1996. High level expression of human lipocortin (annexin) 1 in *Escherichia coli*. Biotechnol. Lett. 18: 163-168
- Hui A., Hayflick J., Dinkelspiel K. & de Boer H.A. 1984. Mutagenesis of the three bases preceding the start codon of the beta-galactosidase mRNA and its effect on translation in *Escherichia coli*. EMBO J. 3:623-629
- Ikemura T. 1981. Correlation between the abundance of *Escherichia coli* transfer RNAs and the occurrence of the respective codons in its protein genes. J. Mol. Biol. 146:1-21
- Ikemura T. 1985. Codon usage and tRNA content in unicellular and multicellular organisms. Mol. Biol. Evol. 2:13-34
- Iost I. & Dreyfus M. 1995. The stability of *Escherichia coli lacZ* mRNA depends upon the simultaneity of its synthesis and translation. EMBO J. 14:3252-3261
- Iost I., Guillerez J. & Dreyfus M. 1992. Bacteriophage T7 RNA polymerase travels far ahead of ribosomes *in vivo*. J. Bacteriol. 174:619-622
- Iserentant D. & Fiers W. 1980. Secondary structure of mRNA and efficiency of translation initiation. Gene 9:1-12
- Jacob F. & Monod J. 1961. Genetic regulatory mechanisms in the synthesis of proteins. J. Mol. Biol. 3:318-356
- Jaeger J. A., Turner D. H. & Zuker M. 1989. Improved predictions of secondary structures for RNA. Proc. Natl. Acad. Sci. 86:7706-7710
- Jain C. & Kleckner N. 1993. IS10 mRNA stability and steady state levels in *Escherichia coli*: indirect effects of translation and role of rne function. Mol. Microbiol. 9, 233-247
- Janoshi L., Hara H., Zhang S. & Kaji A. 1996. Ribosome recycling factor (RRF)-An important but overlooked step of protein biosynthesis. Adv. Biophys. 32:121-201
- Joyce S.A. & Dreyfus M. 1998. In the absence of translation, RNase E can bypass 5' mRNA stabilizers in *Escherichia coli*. J. Mol. Biol. 282:241-254
- Kaberdin V.R., Miczak A., Jakobsen J.S., Lin-Chao S., McDowall K.J. & von Gabain A. 1998. The endoribonucleolytic N-terminal half of *Escherichia coli* RNase E is evolutionarily conserved in *Synechocystis sp.* and other bacteria but not the C-terminal half, which is sufficient for degradosome assembly. Proc. Natl. Acad. Sci. 95:11637-11642

- Kain K.C. & Lanar D.E. 1994. Expression-PCR (E-PCR): overview and applications. *PCR Meth. Appl.* 4:92-96
- Kain K.C., Orlandi P.A. & Lanar D.E. 1991. Universal promoter for gene expression without cloning: expression-PCR. *Biotechniques* 10:366-374
- Kalapos M.P., Cao G.J., Kushner S.R. & Sarkar N. 1994. Identification of a second poly(A) polymerase in *Escherichia coli*. *Biochem. Biophys. Res. Commun.* 198:459-465
- Kalb V.F. Jr. & Bernlohr R.W. 1977. A new spectrophotometric assay for protein in cell extracts. *Anal. Biochem.* 82:362-371
- Kane J. F. 1995. Effects of rare codon clusters on high-level expression of heterologous proteins in *Escherichia coli*. *Curr. Opin. Biotechnol.* 6:494-500
- Keiler K.C., Waller P.R. & Sauer R.T. 1996. Role of a peptide tagging system in degradation of proteins synthesized from damaged messenger RNA. *Science* 271:990-993
- Kennell D. & Riezman H. 1977. Transcription and translation initiation frequencies of the *Escherichia coli lac* operon. *J. Mol. Biol.* 114:1-21
- Kennell D.E. 1986. The instability of messenger RNA in bacteria. In: "Maximizing Gene Expression", 101-142. Reznikoff W. & Gold L. Butterworth, ISBN 0-409-90027-3
- Kigawa T. & Yokoyama S. 1991. A continuous cell-free protein synthesis system for coupled transcription/translation. *J. Biochem.* 110:166-168
- Kim D. & Choi C. 1996. A semicontinuous prokaryotic coupled transcription/translation system using a dialysis membrane. *Biotechnol. Prog.* 12:645-649
- Kim D., Kigawa T., Choi C. & Yokoyama S. 1996. A highly efficient cell-free protein synthesis system from *Escherichia coli*. *Eur. J. Biochem.* 239:881-886
- Kim D.-M. & Choi C.-Y. 1996a. A semicontinuous prokaryotic coupled transcription/translation system using a dialysis membrane. *Biotechnol. Prog.* 12:645-649
- Kim D.-M. & Choi C.-Y. 1996b. A highly efficient cell-free protein synthesis system from *Escherichia coli*. *Eur. J. Biochem.* 239:881-886
- Kirby K.S. 1956. *Biochem. J.* 64:405-408
- Klee C.B. & Singer M.F. 1968. The processive degradation of individual polyribonucleotide chains. II. *Micrococcus lysodeikticus* polynucleotide phosphorylase. *J. Biol. Chem.* 243:923-927
- Klug G. & Cohen S.N. 1990. Combined actions of multiple hairpin loop structures and sites of rate-limiting endonucleolytic cleavage determine differential degradation rates of individual segments within polycistronic *puf* operon mRNA. *J. Bacteriol.* 172:5140-5146
- Klug G., Adams C.W., Belasco J., Doerge B. & Cohen S.N. 1987. Biological consequences of segmental alterations in mRNA stability: effects of deletion of the intercistronic hairpin loop region of the *Rhodobacter capsulatus puf* operon. *EMBO J.* 6:3515-3520
- Kornberg A. 1995. Inorganic polyphosphate: toward making a forgotten polymer unforgettable. *J. Bacteriol.* 177:491-496
- Korner C.G. & Wahle E. 1997. Poly(A) tail shortening by a mammalian poly(A)-specific 3'-exoribonuclease. *J. Biol. Chem.* 272:10448-10456
- Krinke L. & Wulff D.L. 1990. The cleavage specificity of RNase III. *Nucleic Acids Res.* 18:4809-4815
- Kudlicki W., Kramer G. & Hardesty B. 1992. High efficiency cell-free synthesis of proteins: Refinement of the coupled transcription/translation system. *Anal. Biochem.* 206:389-393
- Kurland G.C. 1960. *J. Mol. Biol.* 149:451-476
- Kurzchalia T.V., Wiedmann M., Breiter H., Zimmermann W., Bauschke E. & Rapaport T.A. 1988. tRNA-mediated labelling of proteins with biotin. A nonradioactive method for the detection of cell-free translation products. *Eur. J. Biochem.* 172:663-668
- Laemmli U.K. 1970. Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nature*. 227:680-685

- Lee H.-W., Joo J.-H., Kang S., Song I.-S., Kwon J.-B., Han M. H. & Na D. S. 1992. Expression of human interleukin-2 from native and synthetic genes in *E. coli*: no correlation between major codon bias and high level expression. *Biotechnol. Lett.* 14:653-658
- Lesley S.A., Brow M.A.D. & Burgess R.R. 1991. Use of *in vitro* protein synthesis from polymerase chain reaction-generated templates to study interaction of *Escherichia coli* transcription factors with core RNA polymerase and for epitope mapping of monoclonal antibodies. *J. Biol. Chem.* 266:2632-2638
- Li Z., Pandit S. & Deutscher M.P. 1998. Polyadenylation of stable RNA precursors *in vivo*. *Proc. Natl. Acad. Sci.* 95:12158-12162
- Liebhaber S.A., Cash F. & Eshleman S.S. 1992. Translation inhibition by an mRNA coding region secondary structure is determined by its proximity to the AUG initiation codon. *J. Mol. Biol.* 226:609-621
- Lin-Chao S. & Cohen S.N. 1991. The rate of processing and degradation of antisense RNAI regulates the replication of ColE1-type plasmids *in vivo*. *Cell* 65:1233-1242
- Lindsey D. F., Mullin D. A. & Walker J. R. 1989. Characterization of the cryptic lambdoid prophage DLP12 of *Escherichia coli* and overlap of the DLP12 integrase gene with the tRNA gene *argU*. *J. Bacteriol.* 171:6197-6205
- Looman A.C., Bodlaender J., Comstock L.J., Eaton D., Jhurani P., de Boer H.A. & Knippenberg P.H. 1987. Influence of the codon following the AUG initiation codon on the expression of a modified *lacZ* gene in *Escherichia coli*. *EMBO J.* 6:2489-2492
- Lopez P.J. & Dreyfus M. 1996. The *lacZ* mRNA can be stabilized by the T7 late mRNA leader in *E. coli*. *Biochimie* 78:408-415
- Lopez P.J., Marchand I., Yarchuk O. & Dreyfus M. 1998. Translation inhibitors stabilize *Escherichia coli* mRNAs independently of ribosome protection. *Proc. Natl. Acad. Sci.* 95:6067-6072
- Luking A., Stahl U. & Schmidt U. 1998. The protein family of RNA helicases. *Crit. Rev. Biochem. Mol. Biol.* 33:259-296
- Mackie G.A. 1987. Posttranscriptional regulation of ribosomal protein S20 and stability of the S20 mRNA species. *J. Bacteriol.* 169:2697-2701
- Mackie G.A. 1992. Secondary structure of the mRNA for ribosomal protein S20. Implications for cleavage by ribonuclease E. *J. Biol. Chem.* 267: 1054-1061
- Mackie G.A. 1998. Ribonuclease E is a 5'-end-dependent endonuclease. *Nature* 395:720-723
- Mackie G.A., Genereaux J.L. & Masterman S.K. 1997. Modulation of the activity of RNase E *in vitro* by RNA sequences and secondary structures 5' to cleavage sites. *J. Biol. Chem.* 272:609-616
- Madin T., Sawasaki T., Ogaswara T. & Endo Y. A highly efficient and robust cell-free protein synthesis system prepared from wheat embryos: Plants apparently contain a suicide system directed at ribosomes. *Proc. Natl. Acad. Sci.* 97:559-564
- Makarova O.V., Makarov E.M., Sousa R. & Dreyfus M. 1995. Transcribing of *Escherichia coli* genes with mutant T7 RNA polymerases: Stability of *lacZ* mRNA inversely correlates with polymerase speed. *Proc. Natl. Acad. Sci.* 92:12250-12254
- Makoff A. J. & Smallwood A. E. 1990. The use of two-cistron constructions in improving the expression of a heterologous gene in *E. coli*. *Nucleic Acids Res.* 18:1711-1718
- Makrides S.C. 1996. Strategies for achieving high-level expression of genes in *Escherichia coli*. *Microbiol. Rev.* 60:512-538
- Maniatis T., Fritsch E.T. & Sambrook J. 1989. in: "Molecular Cloning" Cold Spring Harbor Laboratory Press, ISBN 0-87969-309-6 a) 1.25-1.28 b) 1.82-1.84 c) 1.60-1.61
- Martemyanov K.A., Spirin A.S. & Gudkov A.T. 1997. Direct expression of PCR products in a cell-free transcription/translation system: synthesis of antibacterial peptide cecropin. *FEBS Lett.* 414:268-270
- Mathews D. H., Andre T. C., Kim J., Turner D. H., & Zuker M. An updated recursive algorithm for RNA secondary structure prediction with improved free energy parameters. In: Molecular modeling of nucleic acids. ACS Symposium Series 682. Leontis; N.B. , SantaLucia; J., Eds. American Chemical Society, Washington, D. C., 1998) Amer. Chemical Society; ISBN: 0841235414
- Mattheakis L.C. & Nomura M. 1988. Feedback regulation of the *spc* operon in *Escherichia coli*: translational coupling and mRNA processing. *J. Bacteriol.* 170:4484-4492

- Mayer J.E. & Schweiger M. 1983. RNase III is positively regulated by T7 protein kinase. *J. Biol. Chem.* 258:5340-5343
- McCaskill J.S. 1990. The equilibrium partition function and base pair binding probabilities for RNA secondary structure. *Biopolymers* 29:1105-1119
- McCormick J.R., Zengel J.M. & Lindahl L. 1994. Correlation of translation efficiency with the decay of lacZ mRNA in *Escherichia coli*. *J. Mol. Biol.* 239:608-622
- McDowall K.J., Kaberdin V.R., Wu S.W., Cohen S.N. & Lin-Chao S. 1995. Site-specific RNase E cleavage of oligonucleotides and inhibition by stem-loops. *Nature*. 374:287-290
- McDowall K.J., Lin-Chao S. & Cohen S.N. 1994. A+U content rather than a particular nucleotide order determines the specificity of RNase E cleavage. *J. Biol. Chem.* 269:10790-10796
- Medynski D. 1992. Genetic approach to protein structure and function: point mutations as modifiers of protein function. *Bio/Technology* 10:1002-1006
- Merk H., Stiege W., Tsumoto K., Kumagai I. & Erdmann V.A. 1999. Cell-free expression of two single-chain monoclonal antibodies against lysozyme: Effect of domain arrangement on the expression. *J. Biochem.* 125:328-333
- Mertens N., Remaut E. & Fiers W. 1996. Increased stability of phage T7g10 mRNA is mediated by either a 5'- or a 3'-terminal stem-loop structure. *Biol. Chem.* 377:811-817
- Milligan J.F., Groebe D.R., Witherell G.W. & Uhlenbeck O.C. 1987. Oligoribonucleotide synthesis using T7 RNA polymerase and synthetic DNA templates. *Nucleic Acids Res.* 15:8783-8798
- Moazed D., Stern S. & Noller H.F. 1986. Rapid chemical probing of conformation in 16 S ribosomal RNA and 30 S ribosomal subunits using primer extension. *J. Mol. Biol.* 187:399-416
- Mott J.E., Galloway J.L. & Platt T. 1985. Maturation of *Escherichia coli* tryptophan operon mRNA: evidence for 3' exonuclease processing after rho-dependent termination. *EMBO J.* 4:1887-1891
- Mottagui-Tabar S. 1998. Quantitative analysis of *in vivo* ribosomal events at UGA and UAG stop codons. *Nucleic Acids Res.* 26:2789-2796
- Mottagui-Tabar S., Bjornsson A. & Isaksson L.A. 1994. The second to last amino acid in the nascent peptide as a codon context determinant. *EMBO J.* 13:249-257.
- Mullis K.B. & Faloon F.A. 1987. Specific synthesis of DNA *in vitro* via a polymerase-catalyzed chain reaction. *Methods Enzymol.* 155:335-350
- Munson L.M., Stormo G.D., Niece R.L. & Reznikoff W.S. 1984. lacZ translation initiation mutations. *J. Mol. Biol.* 177:663-683
- Murphy J.T. & Lagarias J.C. 1997. Purification and characterization of recombinant affinity peptide-tagged oat phytochrome A. *Photochem. Photobiol.* 65:750-758
- Murphy J.T. & Lagarias J.C. 1997. Purification and characterization of recombinant affinity peptide-tagged oat phytochrome A. *Photochem. Photobiol.* 65:750-758
- Nakano H., Shinbata T., Okumara R., Sekiguchi S., Fujishiro M. & Yamane T. 1999. Efficient coupled transcription/translation from PCR template by a hollow-fiber membrane bioreactor. *Biotechnol. Bioeng.* 64:194-199
- Newbury S.F., Smith N.H. & Higgins C.F. 1987. Differential mRNA stability controls relative gene expression within a polycistronic operon. *Cell* 51:1131-1143
- Nierenberg M.W. & Matthaei J.H. 1961. The dependence of cell-free protein synthesis in *E. coli* upon naturally occurring or synthetic polyribonucleotides. *Proc. Natl. Acad. Sci.* 47:1588-1602
- Nierhaus K.H. 1993. Solution of the ribosome riddle: how the ribosome selects the correct aminoacyl-tRNA out of 41 similar contestants. *Mol. Microbiol.* 9:661-669
- Nilsson G., Belasco J.G., Cohen S.N. & von Gabain A. 1987. Effect of premature termination of translation on mRNA stability depends on the site of ribosome release. *Proc. Natl. Acad. Sci.* 84:4890-4894
- Noren C.J., Anthony-Cahill S.J., Griffith M.C. & Schultz P.G. 1989. A general method for site-specific incorporation of unnatural amino acids into proteins. *Science* 244:182-188.
- Nossal N.G. & Singer M.F. 1968. The processive degradation of individual polyribonucleotide chains. I. *Escherichia coli* ribonuclease II. *J. Biol. Chem.* 243:913-922

- Nygren P.-A., Stahl S. & Uhlen M. 1994. Engineering proteins to facilitate bioprocessing. *Tibtech* 12:184-188
- O'Hara E.B., Chekanova J.A., Ingle C.A., Kushner Z.R., Peters E. & Kushner S.R. 1995. Polyadenylation helps regulate mRNA decay in *Escherichia coli*. *Proc. Natl. Acad. Sci.* 92:1807-1811
- Ohuchi S., Nakano H. & Yamane T. 1998. *In vitro* method for the generation of protein libraries using PCR amplification of a single DNA molecule and coupled transcription/translation. *Nucleic Acids Res.* 26:4339-4346
- Olins P.O. & Rangwala S. H. 1990. Vector for enhanced translation of foreign genes in *Escherichia coli*. *Methods Enzymol.* 185:115-119
- Olins P.O. & Rangwala S.H. 1989. A novel sequence element derived from bacteriophage T7 mRNA acts as an enhancer of translation of the *lacZ* gene in *Escherichia coli*. *J. Biol. Chem.* 264:16973-16976
- Olins P.O., Devine C.S., Rangwala S.H. & Kavka K.S. 1988. The T7 phage gene 10 leader RNA, a ribosome-binding site that dramatically enhances the expression of foreign genes in *Escherichia coli*. *Gene* 73:227-235
- Omer C.A., Diehl R. E. & Kral A. M. 1995. Bacterial expression and purification of human protein prenyltransferases using epitope-tagged, translationally coupled systems. *Methods Enzymol.* 250:3-12
- Ovodov S.Y. & Alakhov Y.B. 1990. mRNA acetylated at 2'-OH-groups of ribose residues is functionally active in cell-free translation system from wheat embryos. *FEBS Lett.* 270:111-114
- Pato M.L., Bennett P.M. and von Meyenburg K. 1973. Messenger ribonucleic acid synthesis and degradation in *Escherichia coli* during inhibition of translation. *J. Bacteriol.* 116:710-718
- Pavlov M.Y., Freistroffer D.V., Dincbas V., MacDougall J., Buckingham R.H. & Ehrenberg M. 1998. A direct estimation of the codon context effect on the efficiency of termination. *J. Mol. Biol.* 284:579-590
- Petersen C. 1987. The functional stability of the *lacZ* transcript is sensitive towards sequence alterations immediately downstream of the ribosome binding site. *Mol. Gen. Genet.* 209:179-187
- Pettersson J. & Liljas A. 1979. The stoichiometry and reconstitution of a stable protein complex from *Escherichia coli* ribosomes. *FEBS Lett.* 98:139-144
- Pettersson J., Hardy S.J.S. & Liljas A. 1976. The ribosomal protein L8 is a complex L7/L12 and L10. *FEBS Lett.* 64:135-138
- Platt T. 1986. Transcription termination and the regulation of gene expression. *Annu. Rev. Biochem.* 55:339-372.
- Poole E.S., Brown C.M. & Tate W.P. 1995. The identity of the base following the stop codon determines the efficiency of *in vivo* translational termination in *Escherichia coli*. *EMBO J.* 14:151-158
- Poole E.S., Major L.L., Mannerling S.A. & Tate W.P. 1998. Translational termination in *Escherichia coli*: three bases following the stop codon crosslink to release factor 2 and affect the decoding efficiency of UGA-containing signals. *Nucleic Acids Res.* 26:954-960
- Ptashne M., Backman K., Humayun M.Z., Jeffrey A., Maurer R., Meyer B. & Sauer R.T. 1976. Autoregulation and function of a repressor in bacteriophage lambda. *Science* 194:156-161
- Py B., Causton, H., Mudd E.A. & Higgins C.F. 1994. A protein complex mediating mRNA degradation in *Escherichia coli*. *Mol. Microbiol.* 14:717-729
- Py B., Higgins C.F., Kirsch H.M. & Carpousis A.J. 1996. A DEAD-box RNA helicase in the RNA degradosome. *Nature* 381:169-172
- Rapaport L.R. & Mackie G.A. 1994. Influence of translational efficiency on the stability of the mRNA for ribosomal protein S20 in *Escherichia coli*. *J. Bacteriol.* 176:992-998
- Rauhut R. & Klug G. 1999. mRNA degradation in bacteria. *FEMS Microbiol. Rev.* 23:353-370
- Regnier P. & Grunberg-Manago M. 1989. Cleavage by RNase III in the transcripts of the met Y-nus-A-*infB* operon of *Escherichia coli* releases the tRNA and initiates the decay of the downstream mRNA. *J. Mol. Biol.* 210:293-302
- Regnier P., Grunberg-Manago M. & Portier C. 1987. Nucleotide sequence of the pnp gene of *Escherichia coli* encoding polynucleotide phosphorylase. Homology of the primary structure of the protein with the RNA-binding domain of ribosomal protein S1. *J. Biol. Chem.* 262:63-68

- Resto E., Iida A., Van Cleve M.D. & Hecht S.M. 1992. Amplification of protein expression in a cell-free system. *Nucleic Acids Res.* 20:5979-5983
- Richardson C.C. 1971. Proc. Nucleic Acid Res. 2:815
- Ringquist S., Shinedling S., Barrick D., Green L., Binkley J., Stormo G. D. & Gold L. 1992. Translation initiation in *Escherichia coli*: sequences within the ribosome-binding site. *Mol. Microbiol.* 6:1219-1229
- Roberts R.W. & Szostak J.W. 1997. RNA-peptide fusions for the in vitro selection of peptides and proteins. *Proc. Natl. Acad. Sci.* 94:12297-12302
- Robinson M., Lilley R., Little S., Emtege J.S., Yarranton G., Stephens P., Millican A., Eaton M. & Humphreys G. 1984. Codon usage can affect efficiency of translation of genes in *Escherichia coli*. *Nucleic Acids Res.* 12:6663-6671.
- Roche E.D. & Sauer RT. 1999. SsrA-mediated peptide tagging caused by rare codons and tRNA scarcity. *EMBO J.* 18:4579-4589
- Rodnina M.V., Savelsbergh A., Katunin V.I. & Wintermeyer W. Hydrolysis of GTP by elongation factor G drives tRNA movement on the ribosome. *Nature* 385:37-41
- Rosenberg A. H. & Studier F. W. 1987. T7 RNA polymerase can direct expression of influenza virus cap-binding protein (PB2) in *Escherichia coli*. *Gene* 59:191-200
- Rosenberg A.H., Goldman E., Dunn J.J., Studier F.W. & Zubay G. 1993. Effects of consecutive AGG codons on translation in *Escherichia coli*, demonstrated with a versatile codon test system. *J. Bacteriol.* 175:716-722
- Ross J. 1995. mRNA stability in mammalian cells. *Microbiol. Rev.* 59:423-450
- Ryabova L.A., Desplancq D., Spirin A.S. & Plückthun A. 1997. Functional antibody production using cell-free translation: effects of protein disulfide isomerase and chaperones. *Nat. Biotechnol.* 15:79-84
- Sanger F., Nicklen S. & Coulson A.R. 1977. DNA sequencing with chain-terminating inhibitors. *Proc. Natl. Acad. Sci.* 74:5463-5467
- Sarkar N. 1997. Polyadenylation of mRNA in prokaryotes. *Annu. Rev. Biochem.* 66:173-197
- Schenborn E.T. & Mierendorf R.C. Jr. 1985. A novel transcription property of SP6 and T7 RNA polymerases: dependence on template structure. *Nucleic Acids Res.* 13:6223-6236
- Scherer G.F.E., Walkinshaw M.D., Arnott S. & Morre D.J. 1980. The ribosome binding sites recognized by *E. coli* ribosomes have regions with signal character in both the leader and protein coding segments. *Nucleic Acids Res.* 8:3895-3907
- Schmidt T.G. AND Skerra A. One-step affinity purification of bacterially produced proteins by means of the "Strep tag" and immobilized recombinant core streptavidin. *J. Chromatogr. A.* 1994 676:337-345
- Schmidt T.G., Koepke J. , Frank R. & Skerra A. 1996. Molecular interaction between the Strep-tag affinity peptide and its cognate target, streptavidin. *J. Mol. Biol.* 255:753-766
- Schneider E., Blundell M. & Kennell D. 1978. Translation and mRNA decay. *Mol. Gen. Genet.* 160:121-129
- Schoner B. E., Belagaje R. M. & Schoner R. G. 1986. Translation of a synthetic two-cistron mRNA in *Escherichia coli*. *Proc. Natl. Acad. Sci.* 83:8506-8510.
- Schulz-Harder B. & Tata J.R. 1982. Inhibition of nuclear ribonuclease activity during transcription *in vitro* by aurintricarboxylic acid and vanadyl ribonucleoside complexes. *Biochem. Biophys. Res. Commun.* 104:903-910
- Schümperli D., McKenney K., Sobieski D. A. & Rosenberg M.. 1982. Translational coupling at an intercistronic boundary of the *Escherichia coli* galactose operon. *Cell* 30:865-871
- Shapiro D.J. 1981. Quantitative ethanol precipitation of nanogram quantities of DNA and RNA. *Anal. Biochem.* 110:229-231
- Sharp P. M. & Bulmer M. 1988. Selective differences among translation termination codons. *Gene* 63:141-145
- Sharp P. M., Cowe E., Higgins D. G, Shields D. C., Wolfe K. H. & Wright F. 1988. Codon usage patterns in *Escherichia coli*, *Bacillus subtilis*, *Saccharomyces cerevisiae*, *Schizosaccharomyces pombe*, *Drosophila*

- melanogaster* and *Homo sapiens*: a review of the considerable within-species diversity. Nucleic Acids Res. 16:8207-8211
- Sharp P.A., Sugden B. & Sambrook J. 1973. Detection of two restriction endonuclease activities in *Haemophilus parainfluenzae* using analytical agarose-ethidium bromide electrophoresis. Biochemistry 12:3055-3063
- Shinedling S., Gayle M., Pribnow D. & Gold L. 1987. Mutations affecting translation of the bacteriophage T4 rIIB gene cloned in *Escherichia coli*. Mol. Gen. Genet. 207:224-232
- Short G.F., Golovine S.Y. & Hecht S.M. 1999. Effects of release factor 1 on *in vitro* protein translation and the elaboration of proteins containing unnatural amino acids. Biochemistry 38:8808-8819
- Siegelman F. & Apirion D. 1971. Aurintricarboxylic acid, a preferential inhibitor of initiation of protein synthesis. J. Bacteriol. 105:902-907
- Singer B.S., Gold L., Shinedling S.T., Colkitt M., Hunter L.R., Pribnow D. & Nelson M.A. 1981. Analysis *in vivo* of translational mutants of the rIIB cistron of bacteriophage T4. J. Mol. Biol. 149:405-432
- Singer P. & Nomura M. 1985. Stability of ribosomal protein mRNA and translational feedback regulation in *Escherichia coli*. Mol. Gen. Genet. 199:543-546
- Skidmore A.F. & Beebee T.J. 1989. Characterization and use of the potent ribonuclease inhibitor aurintricarboxylic acid for the isolation of RNA from animal tissues. Biochem. J. 263:73-80
- Sørensen M.A. & Pedersen S. 1991. Absolute *in vivo* translation rates of individual codons in *Escherichia coli*. The two glutamic acid codons GAA and GAG are translated with a threefold difference in rate. J. Mol. Biol. 222:265-280
- Sørensen M.A., Kurland C.G. & Pedersen S. 1989. Codon usage determines translation rate in *Escherichia coli*. J. Mol. Biol. 207:365-377
- Spanjaard R.A. & van Duin J. 1988. Translation of the sequence AGG-AGG yields 50% ribosomal frameshift. Proc. Natl. Acad. Sci. 85:7967-7971
- Specht T., Wolters J. & Erdmann V.A. 1991. Compilation of 5S rRNA and 5S rRNA gene sequences. Nucl. Acids Res. 19 Suppl:2189-2230
- Spirin A.S., Baranov V.I., Ryabova L.A., Ovodov F.Y. & Alakhov Y.B. 1988. A continuous cell-free translation system capable of producing polypeptides in high yield. Science 242:1162-1164
- Sprengart M. L., Fatscher H. P. & Fuchs E. 1990. The initiation of translation in *E. coli*: apparent base pairing between the 16S rRNA and downstream sequences of the mRNA. Nucleic Acids Res. 18:1719-1723
- Sprengart M. L., Fuchs E. & Porter A. G. 1996. The downstream box: an efficient and independent translation initiation signal in *Escherichia coli*. EMBO J. 15:665-674
- Stern M.J., Ames G.F., Smith N.H., Robinson E.C. & Higgins C.F. 1984. Repetitive extragenic palindromic sequences: a major component of the bacterial genome. Cell 37:1015-1026
- Stewart M.L., Grollman A.P. & Huang M.-T. 1971. Aurintricarboxylic acid: Inhibitor of initiation of protein synthesis. Proc. Natl. Acad. Sci. 68:97-101
- Steige W. & Erdmann V.A. 1995. The potentials of the *in vitro* protein biosynthesis system. J. Biotechnol. 41:81-90
- Stormo G.D., Schneider T. D. & Gold L.M. 1982. Characterization of translational initiation sites in *E. coli*. Nucleic Acids Res. 10:2971-2996
- Stormo G. 1986. Translation initiation. In: „Maximizing gene expression“, 195-224. Reznikoff W. & Gold L. Butterworth, ISBN 0-409-90027-3
- Switzer W.M. & Heneine W. 1995. Rapid screening of open reading frames by protein synthesis with an *in vitro* transcription and translation assay. 18:244-248
- Takata R., Izuohara M. & Akiyama K. 1992. Processing in the 5' region of the pnp transcript facilitates the site-specific endonucleolytic cleavages of mRNA. Nucleic Acids Res. 20:847-850
- Tate W. P. & Brown C. M. 1992. Translational termination: “stop” for protein synthesis or “pause” for regulation of gene expression. Biochemistry 31:2443-2450
- Terhorst C., Möller W., Laursen R. & Wittmann-Liebold B. 1972. FEBS Lett. 28:325-328

- Triana-Alonso F.J., Dabrowski M., Wadzack J. & Nierhaus K.H. 1995. Self-coded 3'-extension of run-off transcripts produces aberrant products during *in vitro* transcription with T7 RNA polymerase. *J. Biol. Chem.* 270: 6298-6307
- Tuerk C. & Gold L. 1990. Systematic evolution of ligands by exponential enrichment: RNA ligands to bacteriophage T4 DNA polymerase. *Science* 259:505-510
- Turner D.H., Sugimoto N. & Freier S.M. 1988. *Ann. Rev. Biophys. Chem.* 17:167-192
- Tzareva N. V., Makhno V. I. & Boni I. V. 1994. Ribosome-messenger recognition in the absence of the Shine-Dalgarno interactions. *FEBS Lett.* 337:189-194
- Ueda T., Tohda H., Chikazumi N., Eckstein F. & Watanabe K. 1991. Phosphorothioate-containing RNAs show mRNA activity in the prokaryotic translation system *in vitro*. *Nucleic Acids Res.* 19:547-552
- Vanzo N.F., Li Y.S., Py B., Blum E., Higgins C.F., Raynal L.C., Krisch, H.M. & Carpousis A.J. 1998. Ribonuclease E organizes the protein interactions in the *Escherichia coli* RNA degradosome. *Genes Dev.* 12:2770-2781
- Varenne S., Baty D., Verheij H., Shire D. & Lazdunski C. 1989. The maximum rate of gene expression is dependent on the downstream context of unfavourable codons. *Biochimie* 71:1221-1229
- Vellanoweth R. L. & Rabinowitz J. C. 1992. The influence of ribosome-binding-site elements on translational efficiency in *Bacillus subtilis* and *Escherichia coli* *in vivo*. *Mol. Microbiol.* 6:1105-1114
- Wada K.-N., Wada Y., Ishibashi F., Gojobori T. & Ikemura T. 1992. Codon usage tabulated from the GenBank genetic sequence data. *Nucleic Acids Res.* 20(Suppl.):2111-2118
- Wagner L.A., Gesteland R.F., Dayhuff T.J. & Weiss R.B. 1994. An efficient Shine-Dalgarno sequence but not translation is necessary for *lacZ* mRNA stability in *Escherichia coli*. *J. Bacteriol.* 176:1683-1688
- Walter A.E., Turner D.H., Kim J., Lyttle M.H., Müller P., Mathews D.H. & Zuker M. 1994. Coaxial stacking of helices enhances binding of oligoribonucleotides and improves predictions of RNA folding. *Proc. Natl. Acad. Sci.* 91:9218-9222
- Weber K & Osborn M. 1969. The reliability of molecular weight determinations by dodecyl sulfate-polyacrylamide gel electrophoresis. *J. Biol. Chem.* 244:4406-4412
- Weiss B., Jacquemin-Sablon A., Live T.R., Fareed G.C. & Richardson C.C. 1968. Enzymatic breakage and joining of deoxyribonucleic acid. VI. Further purification and properties of polynucleotide ligase from *Escherichia coli* infected with bacteriophage T4. *J. Biol. Chem.* 243:4543-4555
- Wulff D.L., Mahoney M., Shatzman A. & Rosenberg M. 1984. Mutational analysis of a regulatory region in bacteriophage lambda that has overlapping signals for the initiation of transcription and translation. *Proc. Natl. Acad. Sci.* 81:555-559
- Xu F. & Cohen S.N. 1995. RNA degradation in *Escherichia coli* regulated by 3' adenylation and 5' phosphorylation. *Nature* 374:180-183
- Yao S., Shen X., Terada S. & Suzuki E. 1997. A novel method of high yield cell-free protein synthesis. *J. Ferment. Bioeng.* 84:548-552
- Young J. F., Dusselberger U., Palese P., Ferguson B., Shatzman A. R. & Rosenberg M. 1983. Efficient expression of influenza virus NS1 nonstructural proteins in *Escherichia coli*. *Proc. Natl. Acad. Sci.* 80:6105-6109
- Yuan R. Structure and mechanism of multifunctional restriction endonucleases. *Annu Rev Biochem.* 1981;50:285-319
- Zhang S., Zubay G. & Goldman E. 1991. Low usage codons in *Escherichia coli*, yeast, fruit fly and primates. *Gene* 105:61-72
- Zubay G. 1973. Cell-free studies on the regulation of the *lac* operon. *Annu. Rev. Genet.* 7:267-287
- Zuker M. & Stiegler P. 1981. Optimal computer folding of large RNA sequences using thermodynamics and auxiliary information. *Nucl. Acid. Res.* 9:133-148
- Zuker M. 1989. On finding all suboptimal foldings of an RNA molecule. *Science* 244:48-52

8.2 Eigene Publikationen

Orginalarbeiten

Merk H., Stiege W., Tsumoto K., Kumagai I. & Erdmann V.A. 1999. Cell-free expression of two single-chain monoclonal antibodies against lysozyme: effect of domain arrangement on the expression. *J Biochem (Tokyo)*. 125:328-333

Gerrits M., Merk H., Stiege W. & Erdmann V.A. 1999. Towards improved applications of Cell-free protein synthesis - the influence of mRNA structure and suppressor tRNAs on the efficiency of the system. in: *RNA Biochemistry and Biotechnology*. (Eds. Barciszewski J. & Clark B.F.C.) *Kluwer Academic Publishers Dordrecht*

Merk. H. 1999. *In vitro Synthese von Einzelstrang-Antikörpern*. Sber. Ges. Naturf. Freunde Berlin, Duncker & Humboldt, Berlin

Merk H., Gerrits M., Stiege W. & Erdmann V.A. 2000. mRNA stability dependent on translational efficiency and on translation-independent effect of translation inhibitors. (in Bearbeitung)

Merk H., Stiege W. & Erdmann V.A. 2000. Universal high yield cell-free expression of PCR products. (in Bearbeitung)

Patent

DE-Patentanmeldung Nr. 101 13 265.4 vom 16.03.2001

Vorträge und Poster

Merk H., Stiege W. & Erdmann V.A. 1998. The optimization of templates for the efficient protein biosynthesis *in vitro* with prokaryotic lysates. – Meeting: Translational control, 09. – 13.09. 1998, Cold Spring Harbour Laboratory, New York – Abstract, Poster

Merk H., Stiege W. & Erdmann V.A. 1998. Influence of mRNA structure on translational efficiency in cell-free protein biosynthesis. – Advanced Workshop: RNA Biochemistry & Biotechnology, 10. - 16.10.1998, Poznan, Polen – Abstract, Poster

Merk. H. Verleihung des Katharina-Heinroth-Preis 1999. *In vitro Synthese von Einzelstrang-Antikörpern*. 19.01.1999, Sber. Ges. Naturf. Freunde Berlin – Vortrag