9. Literatur

Abel K und Jurnak F: A complex profile of protein elongation: translating chemical energy into molecular movement. *Structure* 15 (1996), 229-238

Abelson J, Trotta CR und Li H: tRNA Splicing. *J. Biol. Chem.* 273 (1998), 12685-12688

Abelson JN, Gefter ML, Barnett L, Landy A, Russell RL, Smith JD: Mutant tyrosine transfer ribonucleic acids. *J. Mol. Biol*. 47 (1970), 15-28

Abrahamson JK, Laue TM, Miller DL und Johnson AE: Direct Determination of the Association Constant between Elongation Factor Tu•GTP and Aminoacyl-tRNA Using Fluorescence. *Biochemistry* 24 (1985), 692-700

Abrell JW, Kaufman EE, Lipsett MN: Thermus thermophilus biosynthesis of 4-thiouridylate, Separation and Purification of two enzymes in the transfer ribonucleic acid-sulfurtransferase system. *J. Biol. Chem.* 246 (1971), 294-301

Adamski FM, McCaughan KK, Jorgensen F, Kurland CG und Tate WP: The Concentration of Polypeptide Chain Release Factors 1 and 2 at Different Growth Rates of *Escherichia coli. J. Mol. Biol.* 238 (1994), 302-308

Agrawal RK und Frank J: Structural studies on the translational apparatus. *Cur. Op. Struc. Biol.* 9 (1999), 1215-221

Agrawal RK, Penczek P, Grassucci RA, Li Y, Leith A, Nierhaus KH und Frank J: Direct Visualization of A- P- and E-Site Transfer RNAs in the *Escherichia coli* Ribosome. *Science* 271 (1996), 1000-1002

Allende JE, Monro R und Lipmann F: Resolution of the *Escherichia coli* amino acyl sRNA transfer factor into two complementary fractions. *PNAS* 51 (1964), 1211-1216

Altman S: Biosynthesis of Transfer RNA in *Escherichia coli. Cell* 4 (1975), 21-29

Altman S: Transfer RNA processing enzymes. *Cell* 23 (1981), 3-4

Ankilova VN, Reshetnikova LS, Chernaya MM und Lavrik OI: Phenylalanyl-tRNA synthetase from Thermus thermophilus HB8 - Purification and properties of the crystallizing enzyme. *FEBS* 227 (1988), 9-13

Apiron D und Miczak A: RNA Processing in Prokaryotic Cells. *BioEssays* 15 (1992), 113-120

Arkov AL, Korolev SV und Kisselev SS: Termination of translation in bacteria may be modulated via specific interaction between peptide chain release factor 2 and the last peptidyl-tRNA$^{Ser/Phe}$. *Nucleic Acids Res.* 21 (1993), 2891-2897

Arnes JG und Moras D: Structural and functional considerations of the aminoacylation reaction. *TIBS* 22 (1997), 211-216

Arnez JG und Steitz TA: Crystal Structure of Unmodified tRNA^{Gln} Complexed with Glutaminyl-tRNA Synthetase and ATP Suggests a Possible Role for Pseudo-Uridines in Stabilization of RNA structure. *Biochemistry* 33 (1994), 7560-7567

Arnez JG und Steitz TA: Crystal Structures of Three Misacylating Mutants of *Escherichia coli* Glutaminyl-tRNA Synthetase Complexed with tRNA^{Gln} and ATP. *Biochemistry* 35 (1996), 14725-14733

Asahara H, Himeno H, Tamura K, Hasegawa T, Watanabe K und Shimizu M: Recognition Nucleotides of *Escherichia coli* tRNA^{Leu} and Its Elements Facilitating Discrimination from tRNA^{Ser} and tRNA^{Tyr}. *J. Mol. Biol.*231 (1993), 219-229

Asahara H, Himeno H, Tamura K, Nameki M, Hasegawa T und Shimizu M: *Escherichia coli* Seryl-tRNA Synthetase Recognizes tRNA^{Ser} by Its Characteristic Tertiary Structure. *J. Mol. Biol.*236 (1994), 738-748

Aström SU und Byström AS: Rit1 a tRNA Backbone-Modifying Enzyme That Mediates Initiator and Elongator tRNA Discrimination. *Cell* 79 (1994), 535-546

Atkins JF und Gesteland RF: A case for trans translation. *Nature* 379 (1996), 769-771

Atkins JF, Herbst K, Connor MO, Tuohy TMF, Weiss RB, Wills NM und Gesteland RF: Mutants of tRNA ribosomes and mRNA affecting frameshifting hopping or stop codon read-through in: The Translational Apparatus Edited by Nierhaus KH et al. *Plenum Press New York* 1993, 371-374

Augustine J und Francklyn C: Design of an Active Fragment of a Class II Aminoacyl-tRNA Synthetase and Its Significance for Synthetase Evolution. *Biochemistry* 36 (1997), 3473-3482

Avis JM, Day AG, Garcia GA und Fersht AR: Reaction of Modified and Unmodified $tRNA^{Tyr}$ Substrates with Tyrosyl-tRNA Synthetase (*Bacillus stearothermophilus*). *Biochemistry* 32 (1993), 5312-5320

Bain JD, Diala ES, Glabe CG, Wacker DA, Lyttle MH, Dix TA und Chamberlin AR: Site-Specific Incorporation of Nonnatural Residues during *In vitro* Protein Biosynthesis with Semisynthetic Aminoacyl-tRNAs. *Biochemistry* 30 (1991), 5411-5421

Bain JD, Switzer C, Chamberlin AR und Benner SA: Ribosome-mediated incorporation of a non-standard amino acid into a peptide through expansion of the genetic code. *Nature* 356 (1992), 537-539

Baron C und Böck A: The Length of the Aminoacyl-acceptor Stem of the Selenocysteine-specific $tRNA^{Sec}$ of *Escherichia coli* Is the Determinant for Binding to Elongation Factors SELB or Tu. *J. Biol. Chem.* 266 (1991), 20375-20379

Baron C, Heider J und Böck A: Mutagenesis of selC the gene for the selenocysteine-inserting tRNA-species in *E. coli*: effects on *in vivo* function. *Nucleic Acids Res.* 18 (1990), 6761-6766

Batey RT, Rambo RP und Doudna JA: Tertiäre Motive bei Struktur und Faltung von RNA. *Angew. Chem.* 111 (1999), 2472-2491

Bedouelle H: Recognition of $tRNA^{Tyr}$ by tyrosyl-tRNA synthetase. *Biochimie* 72 (1990), 589-598

Behlen LS, Sampson JR, DiRenzo AB und Uhlenbeck OC: Lead-Catalyzed Cleavage of Yeast $tRNA^{Phe}$ Mutants. *Biochemistry* 29 (1990), 2515-2523

Belrhali H, Yaremchuk A, Tukalo M, Larsen K, Berthet-Colominas C, Leberman R, Beijer B, Sproat B, Als-Nielsen J, Grübel G, Legrand J, Lehmann M und Cusack S: Crystal Structures at 25 Å Resolution of Seryl-tRNA Synthetase Complexed with two Analogs of Seryl Adenylate . *Science* 263 (1994), 1432-1436

Berry MJ, Banu L, Chen Y, Mandel SJ, Kieffer JD, Harney JW und Larsen PR: Recognition of UGA as a selenocysteine codon in Type I deiodinase requires sequences in the 3' untranslated region. *Nature* 353 (1991), 273-276

Bessho Y, Ohama T und Osawa S: Release Factors and genetic code. *Nature* 352 (1991), 575

Beyer D, Skripkin E, Wadzack J und Nierhaus KH: How the Ribosome Moves Along the mRNA during Protein Synthesis. *J. Biol. Chem.* 269 (1994), 30713-10717

Bikoff EK, Gefter ML: In vitro synthesis of transfer RNA. I. Purification of required components. *J. Biol. Chem.* 250 (1975), 6240-6247

Bikoff EK, LaRue BF, Gefter ML: In vitro synthesis of transfer RNA. II. Identification of required enzymatic activities. *J. Biol. Chem.* 250 (1975), 6248-6255

Biou V, Yaremchuk A, Tukalo M und Cusack S: The 29 Å Crystal Structure of T Thermophilus Seryl-tRNA Synthetase Complexed with $tRNA^{Ser}$. *Science* 263 (1994), 1404-1432

Björk GR: Genetic dissection of synthesis and function of modified nucleosides in bacterial transfer RNA. *Prog. Nucleic Acid Res. Mol. Biol.* 50 (1995), 263-338

Björk GR: Stable RNA modification. In: *Escherichia coli* and *Salmonella*: Cellular and Molecular Biology. Second Edition. Neidhardt FC, Curtiss III R, Ingraham JL, Lin ECC, Low Jr KB, Magasanik B, Reznikoff WS, Riley M, Schaechter M, Umbarger HE. ASM Press Washington 1996, 861-886.

Björnsson A und Isaksson LA: Accumulation of a mRNA decay intermediate by ribosomal pausing at a stop codon. *Nucleic Acids Res.* 24 (1996), 1753-1757

Björnsson A, Mottagui-Tabar S und Isaksson LA: Structure of the C-terminal end of the nascent peptide influences translation termination. *EMBO* 15 (1996), 1696-1704

Blanquet B, Mechulam Y, Schmitt E: The many routes of bacterial transfer RNA after aminoacylation. *Cur. Op. Struct. Biol*. 10 (2000), 95-101

Borel F, Härtlein M und Leberman R: *In vivo* overexpression and purification of *Escherichia coli* $tRNA^{Ser}$. *FEBS* 324 (1993), 162-166

Bossi L und Roth JR: The influence of codon context on genetic code translation. *Nature* 286 (1980), 123-128

Bossi L: Context Effects: Translation of UAG Codon by Suppressor tRNA is Affected by the Sequence Following UAG in the Message. *J. Mol. Biol.*164 (1983), 73-87

Bothra AK, Roy S, Mandal C und Mukhophadhyay C: Role of Zinc in tRNA-acceptor Stem Binding by Glutaminyl-tRNA Synthetase From *E. coli*: A Molecular Modeling Study. *J. Biomol. Struc. Dyn*. 15 (1997), 19-25

Bouadloun F, Donner D, Kurland CG: Codon-specific missense errors in vivo. *EMBO J*. 2 (1983), 1351-1356

Bouadloun F, Srichaiyo T, Isaksson LA und Björk GR: Influence of Modification Next to the Anticodon in tRNA on Codon Context Sensitivity of Translational Suppression and Accuracy. *J. Bacteriol.* 166 (1986), 1022-1027

Bourdeau V, Steinberg SV, Ferbeyre G, Emond R, Cermakian N und Cedergren R: Amber suppression in *Escherichia coli* by unusual mitochondria-like transfer RNA. *PNAS* 95 (1998), 1375-1380

Breitschopf K, Achsel T, Busch K und Gross HJ: Identity elements of human $tRNA^{Leu}$: structural requirements for converting human $tRNA^{Ser}$ into a leucine acceptor *in vitro. Nucleic Acids Res.* 23 (1995), 3633-3637

Bremer H und Dennis PP: In: *Escherichia coli* and *Salmonella typhimurium*. Cellular and Molecular Biology. ed.: Neidhard F, Ingraham JL, Low KB, Mgasanik B, Schaechter M und Umbarger HE; American Society for Microbiology, Washington DC (1987) Vol.2, 1527-1542

Brevet A, Chen J, Leveque F, Blanquet S und Plateau P: Comparison of the Enzymatic Properties of the Two *Escherichia coli* Lysyl-tRNA Synthetase Species. *J. Biol. Chem.* 270 (1995), 14439-14444

Brown CM, Stockwell CA, Trotman CNA und Tate WP: The signal for the termination of protein synthesis in procaryotes. *Nucleic Acids Res.* 18 (1990), 2079-2086

Brown CM, Tate WP: Direct recognition of mRNA stop signals by Escherichia coli polypeptide chain release factor two. *J. Biol. Chem.* 269 (1994), 33164-33170

Brunner J: New photolabeling and crosslinking methods. *Annu. Rev. Biochem.* 62 (1993), 483-514

Buechter D und Schimmel P: Dissection of a Class II tRNA Synthetase: Determinants for Minihelix Recognition Are Tightly Associated with Domain for Amino Acid Activation. *Biochemistry* 32 (1993), 5267-5272

Cazenave C und Uhlenbeck OC: RNA template-directed RNA synthesis by T7 RNA polymerase. *PNAS* 91 (1994), 6972-6976

Celis JE, Piper PW: Compilition of mutant suppressor-tRNA sequences. *Nucl. Acids Res*. 10 (1982), r83-r91

Cermakian N, McClain WH und Cedergren R: tRNA nucleotide 47: an evolutionary enigma. *RNA* 8 (1998), 928-936

Chamberlin M, Ring J: *J. Biol. Chem*. 248 (1973), 2235-2244

Chapeville F, Lipmann F, von Ehrenstein G, Weisblum B, Ray WJ Jr, Benzer S: On the Role of Soluble Ribonucleic Acid Encoding for Amino Acid. *PNAS 48* (1962), 1086-1092.

Cheng Y Lin C und Chen L: Transcription and Processing of the Gene for Spinach Chloroplast Threonine tRNA in a Homologous *in vitro* System. *Biochem. Biophys. Res. Com.* 233 (1997), 380-385

Ciesiolka J, Hardt WD, Schlegl J, Erdmann VA und Hartmann RK: Lead-ion-induced cleavage of RNase P RNA. *Eur. J. Biochem.* 219 (1994), 49-56

Clark BFC und Nyborg J: The ternary complex of EF-Tu and its role in protein biosynthesis. *Cur. Op. Struc. Biol.* 7 (1997), 110-116

Cload ST, Liu DR, Froland WA und Schultz PG: Development of improved tRNAs for *in vitro* biosynthesis of proteins containing unnatural amino acids. *Chem. Biol.* 3 (1996), 1033-1038

Commans S und Böck A: Selenocysteine inserting tRNAs: an overview. *FEMS Microbiol. Rev.* 23 (1999), 335-351

Commans S, Blanquet S und Plateau P: A Single Substitition in the Motif 1 of *Escherichia coli* Lysyl-tRNA Synthetase Induces Cooperativity toward Amino Acid Binding. *Biochemistry* 34 (1995), 8180-8189

Commans S, Lazard M, Delort F, Blanquet S und Plateau P: tRNA anticodon recognition and specification within subclass IIb aminoacyl-tRNA synthetases. *J. Mol. Biol*. 278:4 (1998), 801-813

Commans S, Plateau P, Blanquet S und Dardel F: Solution structure of the anticodon-binding domain of *Escherichia coli* lysyl-tRNA synthetase and studies of its interaction with $tRNA^{Lys}$. *J. Mol. Biol.*253 (1995), 100-113

Constantinesco F, Motorin Y und Grosjean H: Transfer RNA modification enzymes from Pyrococcus furiosus: detection of the enzymatic activities *in vitro*. *Nucleic Acids Res.* 27 (1999), 1308-1315

Cooper JB, Halverson DL, Coldren C: Ultrasonic ligation for rapid high-efficiency subcloning in plasmid vectors. *Nucleic Acids Res.* 21 (1993), 1681

Cornish VW, Benson DR, Altenbach CA, Hideg K, Hubbell WL und Schultz PG: Site-specific incorporation of biophysical probes into proteins. *PNAS* 91 (1994), 2910-2914

Craig CT, Muller DK, Coleman JE: Processivity in early stages of transcription by T7 RNA Polymerase. *Biochemistry* 27 (1988), 3966-3974

Craigen WJ und Caskey CT: Translational Frameshifting: Where Will It Stop?. *Cell* 50 (1987), 1-2

Crawford DG, Ito K, Nakamura Y und Tate WP: Indirect regulation of translational termination efficiency at highly expressed genes and recoding sites by the factor recycling function of *Escherichia coli* release factor RF3. *EMBO* 18 (1999), 727-732

Crick FHC: Central dogma of molecular biology. *Nature* 227 (1970), 561-563.

Crick FHC: Codon to Anticodon Pairing: The Wobble Hypothesis. *J. Mol. Biol. 19* (1966), 548-555.

Crick FHC: On Protein Synthesis. *Symp. Soc. Exp. Biol.* 12 (1958), 138-163

Crick FHC: The origin of the genetic code. *J. Mol. Biol.* 38 (1968), 367-379.

Cronenberger JH und Erdmann VA: Stimulation of polypeptide polymerization by blocking of free sulphydryl groups in Escherichia coli ribosomal proteins. J. Mol. Biol. 95 (1975), 125-137

Cudny H und Deutscher MP: 3'- Processing of tRNA Precursors in Ribonuclease-deficient *Escherichia coli*. *J. Biol. Chem.* 263 (1988), 1518-1523

Curran JF, Poole ES, Tate WP und Gross BL: Selection of Aminoacyl-tRNAs at sense codons: the size of the tRNA variable loop determines whether the immidiate 3' nucleotide to the codon has a context effect. *Nucleic Acids Res.* 23 (1995), 4104-4108

Cusack S, Yaremchuk A und Tukalo M: The crystal structure of the ternary complex of T Thermophilus seryl-tRNA synthetase with $tRNA^{Ser}$ and a seryl-adenylate analogue reveals a conformational switch in the active site. *EMBO* 15 (1996), 2834-2842

Cusack S, Yaremchuk A und Tukalo M: The crystal structures of T thermophilus lysyl-tRNA synthetase complexed with E coli $tRNA^{Lys}$ and a T thermophilus $tRNA^{Lys}$ transcript: anticodon recognition and conformational changes upon binding of a lysyl-adenylate analogue. *EMBO* 15 (1996), 6321-6334

Dabrowski M und Nierhaus KH: How tRNAs and mRNAs are held by the ribosome during protein synthesis. *Nucl. Acids Symp. Series* 31 (1994), 265-266

Dabrowski M, Spahn MT und Nierhaus KH: Interaction of tRNAs with the ribosome at the A and P sites. *EMBO* 14 (1995), 4872-4882

Dao V, Guenther R, Malkiewicz A, Nawrot B, Sochacka E, Kraszewski A, Jankowska J, Everett K, Agris PF: Ribosome binding of DNA analogs of tRNA requires base modifications and supports the " extended anticodon *PNAS* 91 (1994), 2125-2129

de Smit MH und van Duin J: Secondary structure of the ribosome binding site determines translational efficiency: A quantitative analysis. *PNAS* 87 (1990), 7668-7672

Delaria K, Guillen M, Louie A und Jurnak F: Stabilization of the *Escherichia coli* Elongation Factor Tu-GTP-Aminacyl-tRNA Complex. *Arch. Biochem. Biophys.* 286 (1991), 207-211

Derrick WB und Horowitz J: Probing structural differences between native and *in vitro* transcribed *Escherichia coli* valine transfer RNA: evidence for stable base modification-dependent conformers. *Nucleic Acids Res.* 21 (1993), 4948-4953

Deutscher MP (1983) in: Enzymes of Nucleic Acid Synthesis and Modification . (herausgegeben durch Jacob S.T.) Vol. II, CRC Press, Inc, BocaRaton, FL, 159-183

Deutscher MP und Marlor CW: Purification and Characterization of *Escherichia coli* RNase T. *J. Biol. Chem.* 260 (1985), 7067-7071

Deutscher MP, Marshall GT und Cudny H (1988): RNase PH: an Escherichia coli phosphate-dependent nuclease distinct from polynucleotide phosphorylase. *PNAS* 85, 4710-4714

Deutscher MP: Promiscuous exoribonukleases of Escherichia Coli. *J. Bacteriol*. 175 (1993), 4577-4583

Dix DB, Wittenberg WL, Uhlenbeck OC und Thompson RC: Effect of replacing uridine 33 in Yeast $tRNA^{Phe}$ on the reaction with ribosomes. J. Biol. Chem. 261 (1986), 10112-10118

Draper DE, White SA, Kean JM.: Preparation of specific ribosomal RNA fragments. *Methods Enz.* 164 (1988), 221-237

Eftink MR: in Fluorescence Quenching Reactions: Probing Biological Macromoleculare Structures. ed. by Dewey ETG, *Plenum New York* (1991), 1-41

Eggertson G und Söll D: Transfer Ribonucleic Acid-Mediated Suppression of Termination Codons in *Escherichia coli*. *Microbiol. Rev.* 52 (1988). 354-374

Ellman J, Mendel D, Anthony-Cahill S, Noren CJ und Schultz PG: Biosynthetic Method for Introducing Unnatural Amino Acids Site-Specifically into Proteins. *Meth. Enzymol*. 202 (1991), 301-336

Elseviers D, Petrullo LA und Gallagher PJ: Novel E. coli mutants deficient in biosynthesis of 5-methylaminomethyl-2-thiouridine. *Nucleic Acids Res.* 12 (1984), 3521 3534

Erdmann VA, Fuchs U, Stiege W: Biotech 2000 (1994) 57-70

Erdmann VA, Stiege W, Henze PP, Ulbrich N: in: Tharmacological Interventions on Central Cholinergic Mechanisms in Senile Dementia". (1989), 45-54 Zuckschwerdt Verlag, München

Ericson JU, Björk GR: tRNA anticodons with the modified nucleoside 2-methylthio-N6-(4-hydroxyisopentenyl)adenosine distinguish between bases 3' of the codon. *J. Mol. Biol.* 218 (1991), 509-516

Esberg B, Björk GR: The methylthio group (ms2) of N6-(4-hydroxyisopentenyl)-2-methylthioadenosine (ms2io6A) present next to the anticodon contributes to the decoding efficiency of the tRNA. *J. Bacteriol*... 177 (1995), 967-975

Faxen M, Kirsebom LA und Isaksson LA: Is Efficiency of Suppressor tRNAs Controlled at the Level of Ribosomal Proofreading *In vivo*? *J Bacteriol.* (1988), 3756-3760

Ferré-D'Amaré AR und Doudna JA: Use of cis- and trans-ribozymes to remove 5‘ and 3‘ heterogeneities from milligrams of in vitro transcribed RNA. *Nucleic Acids Res.* 24 (1996), 977-978

Francklyn C, Musier-Forsyth K und Martinis SA: Aminoacyl-tRNA synthetases in biology and disease: New evidence for structural and functional diversity in an ancient family of enzymes. *RNA* 3 (1997), 954-960

Francklyn C, Musier-Forsyth K und Schimmel P: Small RNA helices as substrates for aminoacylation and their relationship to charging of transfer RNAs. *Eur. J. Biochem.* 206 (1992), 315-321

Frank DN und Pace NR: RIBONUCLEASE P: Unity and Diversity in a tRNA Processing Ribozyme. *Annu. Rev. Biochem.* 67 (1998), 153-180

Freist W, Sternbach H, Pardowitz I und Cramer F: Accuracy of Protein Biosynthesis: Quasi-species Nature of proteins and Possibility of Error Catastrophes. *J. theor. Biol.* 193 (1998), 19-38

Friederich MW und Hagerman PJ: The Angle between the Anticodon and Aminoacyl Acceptor Stems of Yeast $tRNA^{Phe}$ Is Strongly Modulated by Magnesium Ions. *Biochemistry* 36 (1997), 6090-6099

Furdon P und Altman S: Novel non-suppressing mutants of *Escherichia coli* $tRNA^{Tyr}$ su^{+}_{3}. *Nucleic Acids Res.* 13 (1985), 2583-2601

Furter R: Expansion of the genetic code: Site-directed p-fluore-phenylalanine incorporation in Escherichia coli. *Protein Science* 7 (1998), 419-426

Gardner LP, Mookhtiar KA, Coleman JE: Initiation, Elongation, and Processivity of Carboxyl-Terminal Mutanzs of T7 RNA Polymerase. *Biochemistry* 36 (1997), 2908-2918

Garen A, Garen S und Wilhelm RC: Suppressor Genes for Nonsense Mutations. *J. Mol. Biol.*14 (1965), 167-178

Garen A: Sense and nonsense in the genetic code. *Science* 160 (1968), 149-159

Gefter ML, Russell RL: Role modifications in tyrosine transfer RNA: a modified base affecting ribosome binding. *J. Mol. Biol.* 39 (1969), 145-157

Gerrits M, Merk H, Stiege W und Erdmann VA: 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. (herausgegeben durch Barciszewski J und Clark BFC) *Kluwer Academic Publishers Dordrecht* (1999), ISBN 0-7923-5861-9

Gold LM, Schweiger M: Synthesis of phage specific alpha- and beta-glucosyl transferases directed by T-seven DNA in vitro. *PNAS* 63:3 (1969), 892-898

Gold LM, Schweiger M: The initiation of T4 deoxyribonucleic acid-dependent beta-glucosyltransferase synthesis in vitro. *J. Biol. Chem*. 244 (1969), 5100-5104

Goldgur Y, Mosyak L, Reshetnikova L, Ankilova V, Lavrik O, Khodyreva S und Safro M: The crystal structure of phenylalanyl-tRNA synthetase from Thermus thermophilus complexed with cognate $tRNA^{Phe}$. *Structure* 15 (1997), 59-68

Goodman HM, Abelson J, Landy A, Brenner S, und Smith JD: Amber suppression: a nucleotide change in the anticodon of a tyrosine transfer RNA. *Nature* 217 (1968), 1019-1024

Gorini L und Beckwith JR: Suppression. *Annu. Rev. Microbiol*. 20 (1966), 401-422

Green R und Noller HF: Ribosomes and Translation. *Annu. Rev. Biochem.* 66 (1997), 679-716

Gregory ST und Dahlberg AE: Nonsense suppressor and antisuppressor mutations at the 1409-1491 base pair in the decoding region of *Escherichia coli* 16S rRNA. *Nucleic Acids Res.* 23 (1995), 4234-4238

Gu X, Santi DV: Covalent adducts betweentRNA (m5U54)-methyltransferase and RNA substrates. *Biochemistry* 31 (1992), 10295-10302

Gu X, Santi DV: Thermus thermophilus T-arm of tRNA is a substrate for tRNA (m5U54)-methyltransferase. *Biochemistry* 30 (1991), 2999-3002

Guenther RH, Hardin CC, Sierzputowska-Gracz H, Dao V, Agris PF: A magnesium-induced conformational transition in the loop of a DNA analog of the yeast tRNA(Phe) anticodon is dependent on RNA-like modifications of the bases of the stem. *Biochemistry* 31 (1992), 11004-11011

Hall B und Spiegelman S: Sequence Complementarity of T2-specific DNA and T2-specific RNA. *PNAS* 47 (1961), 137–146

Hall KB, Sampson JR, Uhlenbeck OC und Redfield AG: Structure of an Unmodified tRNA Molecule. *Biochemistry* 28 (1989), 5794-5801

Hardt WD, Schlegl J, Erdmann VA und Hartmann RK: Role of the D Arm and the Anticodon Arm in tRNA Recognition by Eubacterial and Eukaryotic RNase P Enzymes. *Biochemistry* 32 (1993), 13046-13053

Harrington KM, Nazarenko IA, Dix DB, Thompson RC und Uhlenbeck OC: *In vitro* Analysis of Translational Rate and Accuracy with an Unmodified tRNA. *Biochemistry* 32 (1993), 7617-7622

Härtlein M und Cusack S: Structure Function and Evolution of Seryl-tRNA Synthetases: Implications for the Evolution of Aminoacyl-tRNA Sythetases and the Genetic Code. *J. Mol. Evol.* 40 (1995), 519-530

Hasan A, Stengele KP, Giegrich H, Cornwell P, Isham KR, Sachleben RA, Pfleiderer W und Foote RS: Photolabile Protecting Groups for Nucleosides: Synthesis and Photodeprotection Rates. *Tetrahedron* 53 (1997), 4247-4264

Hayashi I, Kawai G und Watanabe K: Expression of bovine mitochondrial $tRNA^{Ser}_{GCU}$ derivates in *Escherichia coli. Nucleic Acids Res.* 25 (1997), 3503-3507

Hecht SM, Alford BL, Kuroda Y und Kitano S: *J. Biol. Chem.* 253 (1978), 4517-4520

Heider J, Baron C und Böck A: Coding from a distance: dissection of the mRNA determinants required for the incorporation of selenocysteine into protein. *EMBO* 11 (1992), 3759-3766

Helm M, Brulé H, Degoul F, Cepanec C, Leroux JP, Giegé R, Florentz C: The presence of modified nucleotides is required for cloverleaf folding of a human mitochondrial tRNA. *Nucleic Acids Res.* 26 (1998), 1636-1643

Helm M, Brule H, Giege R und Florentz C: More mistakes by T7 RNA polymerase at the 5' ends of *in vitro*-transcribed RNAs. *RNA* 5 (1999), 618-621

Helm M, Giegé R, Florentz C: A Watson-Crick base-pair-disrupting methyl group (m1A9) is sufficient for cloverleaf folding of human mitochondrial tRNALys. *Biochemistry* 38 (1999), 13338-13346

Herrlich P, Scherzinger E, Schweiger M, Trautner TA: Identification of the " sense"strand of T7 DNA through heteroduplex directed in vitro enzyme synthesis. *Mol. Gen. Genet.* 118 (1972), 61-65

Herrlich P, Schweiger M: DNA- and RNA-directed synthesis in vitro of phage enzymes. *Methods Enzy*mol. 30 (1974), 654-668

Herrlich P, Schweiger M: RNA polymerase synthesis in vitro directed by T7 phage DNA. *Mol. Gen. Genet*. 110 (1971), 31-35

Herrlich P, Schweiger M: T3 and T7 bacteriophage deoxyribonucleic acid-directed enzyme synthesis in vitro. *J. Virol.* 6 (1970), 750-753

Hershey JWB: Protein Synthesis. In: *Escherichia coli* and *Salmonella typhimurium*. Cellular and Molecular Biology. ed.: Neidhard F, Ingraham JL, Low KB, Mgasanik B, Schaechter M und Umbarger HE; American Society for Microbiology, Washington DC (1987) Kap 40, 613-647

High S, Martoglio B, Görlich D, Andersen SSL, Ashford AJ, GinerA, Hartmann E, Prehn S, Rapoport TA, Dobberstein B und Brunner J: Site-specific Photocross-linking Reveals That Sec61p and TRAM Contact Different Regions of a Membrane-inserted Signal Sequence. *J. Biol. Chem.* 268 (1993), 26745-26751

Himeno H, Hasegawa T, Ueda T, Watanabe K und Shimizu M: Conversion of aminoacylation specificity from $tRNA^{Tyr}$ to $tRNA^{Ser}$ *in vitro. Nucleic Acids Res.* 18 (1990), 6815-6819

Hoagland MB, Zamecnik PC und Stephenson ML: Intermediate reactions in protein biosynthesis. *Biochim. Biophys. Acta* 24 (1957), 215-216

Holley RW, Apgar J, Everett GA, Madison JT, Marquisee M, Merill SH, Penswick JR und Zamir A: Structure of a ribonucleic acid. *Science* 147 (1965), 1462-1465

Hou Y und Schimmel P: A simple structural feature is a major determinant of the identity of a transfer RNA. *Nature* 333 (1988), 140-145

Hou Y und Schimmel P: Functional Compensation of a Recognition-Defective Transfer RNA by a Distal Base Pair Substitution. *Biochemistry* 31 (1992), 10310-10314

Hou Y und Schimmel P: Novel tRNAs That Are Active in *Escherichia coli. Biochemistry* 31 (1992), 4157-4161

Hou Y, Shiba K, Mottes C und Schimmel P: Sequence determination and modeling of structural motifs for the smallest monomeric aminoacyl-tRNA synthetase. *PNAS* 88 (1991), 976-980

Hou Y, Sterner T und Jansen M: Permutation of a Pair of Tertiary Nucleotides in a Transfer RNA. *Biochemistry* 34 (1995), 2978-2984

Hou Y: Discriminating among the discriminator bases of tRNAs. *Chem. Biol.* 4 (1997), 93-96

Ibba M, Becker HD, Stathopoulos C, Tumbula DL, Söll D: The adaptor hypothesis revesited. *TIBS* 25 (2000), 311-316

Ikeda RA und Richardson CC: Enzymatic properties of a proteolytically nicked RNA polymerase of Bacteriophage T7. *J. Biol. Chem.* 262 (1987), 3790-3799

Ikemura T: Codon Usage and tRNA Content in Unicellular and Multicellular Organisms. *Mol. Biol. Evol.* 2 (1985), 13-34

Illangesekare M und Yarus M: Specific rapid synthesis of Phe-RNA by RNA. *PNAS* 96 (1999), 5470-5475

Ito K, Ebihara K, Uno M, Nakamura Y: Conserved motifs in prokaryotic and eukaryotic polypeptide release factors: tRNA-protein mimicry hypothesis. *Proc Natl Acad Sci U S A* 93 (1996), 5443-5448

Jain SK, Pragai B und Apirion D: A possible complex containing RNA processing enzymes. *Biochem. Biophys. Res. Com.* 106 (1982), 768-778

Jakubowski H: Misacylation of $tRNA^{Lys}$ with Noncognate Amino Acids by Lysyl-tRNA Synthetase. *Biochemistry* 38 (1999), 8088-8093

Jakubowski H: Proofreading *in vivo* - editing of Homosystein by Aminoacyl-tRNA Synthetases in *Escherichia coli. J. Biol. Chem.* 270 (1995), 17672-17673

Janoshi L, Hara H, Zhang S, Kaji A: Ribosome recycling factor (RRF)-An important but overlooked step of protein biosynthesis. *Adv. Biophys.* 32 (1996), 121-201

Janosi L, Ricker R und Kaji A: Dual functions of ribosome recycling factor in protein biosynthesis: Disassembling the termination complex and preventing translational errrors. *Biochimie* 78 (1996), 959-969

Jaskunas SR, Lindahl L, Nomura M und Burgess RR: Identification of two copies of the gene for elongation factor EF-Tu in *E. coli*. *Nature* 257 (1975), 458-462

Jermutus L, Ryabova LA, Plückthun A: Recent advances in producing and selecting functional proteins by using cell-free translation. Cur. Op. Biotechnol. 9 (1998), 534-548

Judice JK, Gamble TR, Murphy EC, de Vos AM und Schultz PG: Probing the Mechanism of Staphylococcal Nuklease with Unnatural Amino Acids: Kinetic and Structural Studies. *Science* 261 (1993), 1578-1581

Kahn D, Fromant M, Fayat G, Dessen P, Blanquet S: Methionyl-transfer-RNA transformylase from Escherichia coli. Purification and characterisation. *Eur. J. Biochem.* 105 (1980), 489-497

Kao C, Zheng M und Rüdisser S: A simple and efficient method to reduce nontemplated nucleotide addition at the 3‘ terminus of RNAs transcribed by T7 RNA polymerase. *RNA* 5 (1999), 1268-1272

Karginov VA, Mamaev SV und Hecht SM: *In vitro* suppression as a tool for the investigation of translation initiation. *Nucleic Acids Res.* 25 (1997), 3912-3916

Kaufmann G: Anticodon nucleases. *TIBS* 25 (2000), 70-74

Keiler KC, Waller PRH und Sauer RT: Role of a Peptide Tagging System in Degradation of Proteins Synthesized from Damaged Messenger RNA. *Science* 271 (1996), 990-993

Kelly K und Deutscher MP: Characterization of *Escherichia coli* RNase PH. *J. Biol. Chem.* 267 (1992), 17153-17158

Kelly KO, Reuven NB, Li Z und Deutscher MP: RNase PH Is Essential for tRNA Processing and Viability in RNase-deficient *Escherichia coli* Cells. *J. Biol. Chem.* 267 (1992), 16015-16018

Kennell D und Riezman H: *J. Mol. Biol.* 114 (1977), 1-21

Khan AS und Roe BA: Aminoacylation of Synthetic DNAs Corresponding to *Escherichia coli* Phenylalanine and Lysine tRNAs. *Science* 241 (1988), 74-79

Kholod N, Vassilenko K, Shlyapnikov M, Ksenzenko V und Kisselev L: Preparation of active tRNA gene transcripts devoid of 3’-ended products and dimers. *Nucleic Acids Res.* 26 (1998), 2500-2501

Kigawa T, Yabuki T, Yoshida Y, Tsutsui M, Ito Y, Shibata T und Yokoyama S: Cell-free production and stable-isotope labeling of milligram quantities of proteins. *FEBS letters* 442 (1999), 15-19

Killian JA, Van Cleve MD, Shayo YF, Hecht SM: Ribosome-mediated incorporation of Hydrazinophenylalanine inte modified peptide and protein analogues. *J. Am. Chem. Soc*. 120 (1998), 3032-3042

Kim HJ, Pelka H, Brunie S, und Schulman LH: Two Separate Peptides in *Escherichia coli* Methionyl-tRNA Synthetase Form the Anticodon Binding Site for Methionine tRNA. *Biochemistry* 32 (1993), 10506-10511

King TC, Sirdeskmukh R, Schlessinger D: Nucleolytic processing of ribonucleic acid transcripts in procaryotes. *Microbiol Rev.* 50 (1986), 428-51

Kirillov S, Porse BT, Vester B, Woolley P und Garrett RA: Movement of the 3'-end of tRNA through the peptidyl transferase centre and its inhibition by antibiotics. *FEBS* 406 (1997), 223-233

Kirillov S, Vitali LA, Goldstein BP, Monti F, Semenkov Y, Makhno V, Ripa S, Pon CL und Gualerzi CO: Purpuromycin: An antibiotic inhibiting tRNA aminoacylation. *RNA* 3 (1997), 905-913

Kleina LG, Masson J, Normanly J, Abelson J und Miller JH: Construction of *Escherichia coli* Amber Suppressor tRNA Genes II Synthesis of Additional tRNA genes and Improvement of Suppressor Efficiency. *J. Mol. Biol.* 213 (1990), 705-717

Klug SJ, Hüttenhofer A, Kromayer M, und Famulok M: *In vitro* and *in vivo* characterization of novel mRNA motifs that bind special elongation factor SelB. *PNAS* 94 (1997), 6676-6681

Knight RD, Freeland SJ und Landweber LF: Selection history and chemistry: the three faces of the genetic code. *TIBS* 24 (1999), 241-250

Knippers R: Molekulare Genetik (1995); Thieme, Stuttgart; ISBN 3131039167

Komatsoulis GA und Abelson JN: Recognition of tRNA(Cys) by Escherichia coli cysteinyl-tRNA synthetase. *Biochemistry* 32 (1993), 7435-7444

Kopelowitz J, Hampe C, Goldman R, Reches M und Engelberg-Kulka H: Influence of Codon Context on UGA Suppression and Readthrough. *J. Mol. Biol.*225 (1992), 261-269

Kudlicki W, Kramer G, Hardesty B: High Efficiency Cell-Free Synthesis of Proteins: Refinement of the Coupled Transcription/ Translation System. *Analyt. Biochem.* 206 (1992), 389-393

Kurzchalia TV, Wiedmann M, Breter H, Zimmermann W, Bauschke E und Rapoport TA: tRNA-mediated labelling of proteins with biotin – A nonradioactive method for the detection of cell-free translation products. *Eur. J. Biochem.* 172 (1988), 663-668

Laemmli UK: Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nature* 227 (1979), 680-685

Laforest M, Roewer I und Lang BF: Mitochondrial tRNAs in the lower fungus Spizellomyces punctatus: tRNA editing and UAG 'stop' codons recognized as leucine. *Nucleic Acids Res.* 25 (1997), 626-632

Lee C, Dyson MR, Mandal N, Varshney U, Bahramian B und RajBhandary UL: Striking effects of coupling mutations in the acceptor stem on recognition of tRNAs by *Escherichia coli* Met-tRNA synthetase and Met-tRNA transformylase. *PNAS* 89 (1992), 9262-9266

Lee CP, Mandal N, Dyson MR und RajBhandary UL: The discriminator base influences tRNA structure at the end of the acceptor stem and possibly its interaction with proteins. *PNAS* 90 (1993), 7149-7152

Leinfelder W, Forchhammer K, Veprek B, Zehelein E und Böck A: *In vitro* synthesis of selenocysteinyl-tRNA$_{UCA}$ from seryl-tRNA$_{UCA}$: Involvement and characterization of the selD gene product. *PNAS* 87 (1990), 543-547

Leinfelder W, Zehelein E, Mandrand-Berthelot MA und Böck A: Gene for a novel tRNA species that accepts L-serine and cotranslationally inserts selenocysteine. *Nature* 331 (1988), 723-725

Leung HE, Chen Y und Winkler ME: Regulation of Substrate Recognition by the MiaA tRNA Prenyltransferase Modification Enzyme of *Escherichia coli* K-12. *J. Biol. Chem.* 272 (1997), 13073-13083

Li J und Björk GR: Structural alterations of the tRNA(m^1G37)methyltransferase from Salmonella typhimurium affect tRNA substrate specificity. *RNA* 5 (1999), 395-408

Li Z und Deutscher MP: Maturation Pathways for E coli tRNA Precursors: A Random Multienzyme Process *In vivo. Cell* 86 (1996), 503-512

Li Z und Deutscher MP: The Role of Individual Exoribonucleases in Processing at the 3' End of *Escherichia coli* tRNA Precursors. *J. Biol. Chem.* 269 (1994), 6064-6071

Li Z und Deutscher MP: The tRNA processing enzyme RNase T is essential for maturation of 5S RNA. *PNAS* 92 (1995), 6883-6886

Li Z, Pandit S und Deutscher MP: 3' Exoribonucleolytic trimming is a common feature of the maturation of small stable RNAs in *Escherichia coli. PNAS* 95 (1998), 2856-2861

Li Z, Zhan L und Deutscher MP: The Role of Individual Cysteine Residues in the Activity of *Escherichia coli* RNase T. *J. Biol. Chem.* 271 (1996), 1127-1132

Lill R, Robertson JM, Wintermeyer W: tRNA binding sites of ribosomes from Escherichia coli. *Biochemistry* 23:26 (1984) 6710-6717

Lifsey Jr BJ, Farkas WR und Reyniers JP: Interaction of lysinoalanine with the protein synthesizing apparatus. *Chem. Biol. Interact.* 68 (1988), 241-257

Liljas A und Garber M: Ribosomal proteins and elongation factors. *Cur. Op. Struc. Biol.* 5 (1995), 721-727

Liljas A.: Imprinting through molecular mimicry. Protein synthesis. *Curr. Biol.* 6 (1996), 247-249

Limbach PA, Crain PF und McCloskey JA: Summary: the modified nucleosides of RNA. *Nucleic Acids Res.* 22 (1994), 2183-2196

Lippmann C, Lindschau C, Vijgenboom E, Schröder W, Bosch L, Erdmann VA: Prokaryotic elongation factor Tu is phosphorylated in vivo. *J. Biol. Chem.* 268 (1993), 601-607

Liu DR und Schultz PG: Progress toward the evolution of an organism with an expanded genetic code. *PNAS* 96 (1999), 4780-4785

Liu DR, Magliery TJ und Schultz PG: Characterization of an 'orthogonal' suppressor tRNA derived from E coli tRNA2(Gln). *Chem. Biol.* 4 (1997), 685-691

Liu DR, Magliery TJ, Pastrnak M und Schultz PG: Engineering a tRNA and aminoacyl-tRNA synthetase for the site-specific incorporation of unnatural amino acids into proteins *in vivo. PNAS* 94 (1997), 10092-10097

Louie A und Jurnak F: Kinetic Studies of *Escherichia coli* Elongation Factor Tu (Guanosine 5'-Triphosphate) Aminoacyl-tRNA Complexes. *Biochemistry* 24 (1985), 6433-6439

Louie A, Ribeiro NS, Reid BR und Jurnak F: Relative Affinities of All *Escherichia coli* Aminoacyl-tRNAs for Elongation Factor Tu-GTP. *J. Biol. Chem.* 259 (1984), 5010-1016

Lustig F, Boren T, Claesson C, Simonsson C, Barciszewska M und Lagerkvist U: The nucleotide in position 32 of the tRNA anticodon loop determines ability of anticodon UCC to discriminate among glycine codons. *PNAS* 90 (1993), 3343-3347

Ma C, Kudlicki W, Odom OW, Kramer G, Hardesty B. In vitro protein engineering using synthetic tRNA(Ala) with different anticodons. *Biochemistry* 32 (1993), 7939-7945

Maniatis T, Fritsch ET, Sambrook J (1989): Molecular Cloning. Cold Spring Harbor Laboratory press, ISBN 0-87969-309-6

Madore E, Florentz C, Giegé R, Lapointe J: Magnesium-dependent alternative foldings of active and inactive Escherichia coli tRNA(Glu) revealed by chemical probing. *Nucleic Acids Res.* 27 (1999), 3583-3588

Martin F, Reinbolt J, Dirheimer G, Gangloff J, Eriani G: Selection of tRNA(Asp) amber suppressor mutants having alanine, arginine, glutamine, and lysine identity. *RNA* (1996), 919-927

Martin R, Weiner M und Gallant J: Effects of Release Factor Context at UAA Codons in *Escherichia coli. J. Bacteriol*. 170 (1988), 4714-4717

Martinis SA und Schimmel P: Enzymatic aminoacylation of sequence-specific RNA minihelices and hybrid duplexes with methionine. *PNAS* 89 (1992), 65-69

Masson JM, Miller JH: Expression of synthetic tRNA genes under the control of a synthetic promoter. *Gene* 47, (1986), 179-183

Matsumura K, Ito K, Kawazu Y, Mikuni O und Nakamura Y: Suppression of Temperature-sensitive Defects of Polypeptide Release Factor RF1 and RF2 by Mutations or by an Excess of RF3 in *Escherichia coli. J. Mol. Biol.*258 (1996), 588-599

Mazauric M, Keith G, Logan D, Kreutzer R, Giege R und Kern D: Glycyl-tRNA synthetase from Thermus thermophilus - Wide structural divergence with other prokaryotic glycyl-tRNA

synthetases and functional inter-relation with prokaryotic and eukaryotic glycylation systems. *Eur. J. Biochem.* 251 (1998), 744-757

McCaughan KK, Poole ES, Pel HJ, Mansell JB, Mannering SA, Tate WP: Efficient in vitro translational termination in Escherichia coli is constrained by the orientations of the release factor, stop signal and peptidyl-tRNA within the termination complex. *Biol. Chem.* 379 (1998), 857-866

McClain WH und Foss K: Changing the identity of a tRNA by introducing a G-U wobble pair near the 3‘ acceptor end. *Science* 240 (1988), 793-796

McClain WH, Foss K, Jenkins RA und Schneider J: Nucleotides that determines *Escherichia coli* tRNA(Arg) und tRNA(Lys) acceptor identities revealed by analysis of mutant *opal* and *amber* suppressor-tRNAs. *PNAS* 87 (1990), 9260-9264

McClain WH: Identity of *Escherichia coli* tRNA(Cys) determined by nucleotides in three regions of tRNA tertiary structure. *J. Biol. Chem.* 268 (1993), 19398-19402

Melton DA, Krieg PA, Rebagliati MR, Maniatis T, Zinn K und Green MR: *Nucleic Acids Res.* 12 (1984), 7035-7056

Merk H: Steigerung der Effizienz des Escherichia coli in vitro Translationssystems durch Optimierung der Nukleinsäurekomponenten. Inaugural – Dissertation zur Erlangung des Doktorgrades am Fachbereich Chemie der freien Universität Berlin 2000

Merk H, Stiege W, Tsumoto K, Kumagai I und Erdmann VA: Cell-Free Expression of Two Single-Chain Monoclonal Antibodies against Lysozyme: Effect of Domain Arrangement on the Expression. *J. Biochem.* 125 (1999), 328-333

Mikuni O, Ito K, Moffat J, Matsamura K, McCaughan K, Nobukuni T, Tate W und Nakamura Y: Identification of the *prfC* gene, which encodes peptide-chain-release factor 3 of *Escherichia coli. PNAS 91* (1994), 5798-5802

Miller JH und Albertini AM: Effects of Surrounding Sequence on the Suppression of Nonsense Codons. *J. Mol. Biol.*164 (1983), 59-71

Miller JH, Coulondre C, Farabaugh PJ: Correlation of nonsense sites in the lacI gene with specific codons in the nucleotide sequence. *Nature* 24 (1978), 5673

Milligan JF, Groebe DR, Witherell GW und Uhlenbeck OC: Oligoribonucleotide synthesis using T7 RNA polymerase and synthetic DNA template. *Nucleic Acids Res.* 15 (1987), 8783-8798

Mitchell P, Stade K, Oßwald M und Brimacombe R: Site-directed cross-linking studies on the *E. coli* tRNA-ribosome complex: determination of sites labelled with an aromatic azide attached to the variable loop or aminoacyl group of tRNA. *Nucleic Acids Res.* 21 (1993), 887-896

Moffat JG und Tate WP: A Single Proteolytic Cleavage in Release Factor 2 Stabilizes Ribosome Binding and Abolishes Peptidyl-tRNA Hydrolysis Activity. *J. Biol. Chem.* 269 (1994), 18899-18903

Moor NA, Ankilova VN und Lavrik O: Recognition of $tRNA^{Phe}$ by phenylalanyl-tRNA synthetase of Thermus thermophilus. *FEBS* 234 (1995), 897-902

Moran S, Ren RX, Sheils CJ, Rumney IV S und Kool ET: Non-hydrogen bonding ‘terminator’ nucleosides increase the 3’-end homogeneity of enzymatic RNA and DNA synthesis. *Nucleic Acids Res.* 24 (1996), 2044-2052

Moroney SE, Piccirilli JA: Abortive products as initiating nucleotides during transcription by T7 RNA Polymerase. *Biochemistry* 30 (1991), 10343-1034

Morris RC, Brown KG, Elliott MS: The effect of queuosine on tRNA structure and function. *J. Biomol. Struct. Dyn.* 16 (1999), 757-774

Mosyak L, Reshetnikova L, Goldgur Y, Delarue M und Safro MG: Structure of phenylalanyl-tRNA synthetase from Thermus thermophilus. *Nature Struc. Biol.* 2 (1995), 537-547

Motorin Y, Bec G, Tewari R und Grosjean H: Transfer RNA recognition by the *Escherichia coli* Δ^2-isopentenyl-pyrophosphate:tRNA Δ^2-isopentenyl transferase: Dependence on the anticodon arm structure. *RNA* 3 (1997), 721-733

Mottagui-Tabar S, Björnsson A und Isaksson LA: The second to last amino acid in the nascent peptide as a codon context determinat. *EMBO* 13 (1994), 249-257

Mottagui-Tabar S: Quantitative analysis of *in vivo* ribosomal events at UGA and UAG stop codons. *Nucleic Acids Res.* 26 (1998), 2789-2796

Mullis KB, Faloona FA: Specific synthesis of DNA in vitro via a polymerase-catalysed chain reaction. *Methods Enzymol.* 177 (1987), 335-350

Muller CK, Martin CT, Coleman JE: *Biochemistry* 20 (1988), 5763-5771

Müller U, Schübel H, Sprinzl M und Heinemann U: Crystal structure of acceptor stem of $tRNA^{Ala}$ from *Escherichia coli* shows unique G•U wobble base pair at 116 Å resolution. *RNA* 5 (1999), 670-677

Muramatsu T, Nishikawa K, Nemoto F, Kuchino Y, Nishimura S, Miyazawa T und Yokoyama S: Codon and amino-acid specificities of a transfer RNA are both converted by a single post-transcriptional modification. *Nature* 336 (1988), 179-181

Nakamura K, Inouye M: Construction of versatile expression cloning vehicules using the lipoprotein gene of *Escherichia coli*. *EMBO J.* 1 (1982), 771-775

Nakamura Y, Ito K, Isaksson LA: Emerging understanding of translation termination. *Cell* 87 (1996), 147-150

Nicholson AW: Function, mechanism and regulation of bacterial ribonucleases. *FEMS Microbiol. Rev*. 23 (1999), 371-390

Nierhaus KH: Solution of the ribosome riddle: how the ribosome selects the correct aminoacyl-tRNA out of 41 similar contestants. *Mol. Microbiol.* 9 (1993), 661-669

Nierhaus KH: The allosteric three-site model for the ribosomal elongation cycle: Features and future. *Biochemistry* 29 (1990), 4997-5008

Nirenberg NW und Matthaei JH: The dependence of Cell-free protein synthesis in *E. coli* on naturally occuring or synthetic polyribonucleotides. *PNAS* 47 (1961), 1588–1602

Nissan TA, Oliphant B und Perona JJ: An engineered class I transfer RNA with a class II tertiary fold. *RNA* 5 (1999), 434-445

Nissen P, Kjeldgaard M, Thirup S, Clark BFC und Nyborg J: The ternary complex of aminoacylated tRNA and EF-Tu–GTP Recognition of a bond and a fold. *Biochimie* 78 (1996), 921-933

Nissen P, Kjeldgaard M, Thirup S, Polekhina G, Reshetnikova L, Clark BFC und Nyborg J: Crystal Structure of the Ternary Complex of Phe-$tRNA^{Phe}$ EF-Tu and a GTP Anolog. *Science* 270 (1995), 1464-1472

Nissen P, Thirup S, Kjeldgaard M und Nyborg J: The crystal structure of Cys-$tRNA^{Cys}$-EF-Tu-GDPNP reveals general and specific features in the ternary complex and in tRNA. *Structure* 7 (1999), 143-156

Noren CJ, Anthony-Cahill SJ, Griffith MC und Schultz PG: A general method for site-specific incorporation of unnatural amino acids into proteins. *Science* 244 (1989a), 182-188

Noren CJ, Anthony-Cahill SJ, Suich DJ, Noren KA, Griffith MC und Schultz PG: *In vitro* suppression of an amber mutation by a chemically aminoacylated transfer RNA prepared by runoff transcription. *Nucleic Acids Res.* 18 (1989b), 83-88

Normanly J, Kleina LG, Masson J, Abelson J und Miller JH: Construction of *Escherichia coli* Amber Suppressor tRNA Genes. III Determination of tRNA Specificity. *J. Mol. Biol.*312 (1990), 719-726

Normanly J, Masson J, Kleina LG, Abelson J und Miller JH: Construction of two *Escherichia coli* amber suppressor tRNA genes: $tRNA^{Phe}_{CUA}$ and $tRNA^{Cys}_{CUA}$. *PNAS* 83 (1986), 6548-6552

Normanly J, Ogden RC, Horvath SJ und Abelson J: Changing the identity of a transfer RNA. *Nature* 321 (1986), 213-219

Normanly J, Ollick T und Abelson J: Eight base changes are sufficient to convert a leucine-inserting tRNA into a serine-inserting tRNA. *PNAS* 89 (1992), 5680-5684

Nowak MW, Kearney PC, Sampson JR, Saks ME, Labarca CG, Silverman SK, Zhonge W, Thorson J, Abelson JN, Davidson N, Schultz PG, Dougherty DA und Lester HA: Nicotinic Receptor Binding Site Probed with Unnatural Amino Acid Incorporation in Intact Cells. *Science* 268 (1995), 439-442

Nyborg J, Nissen P, Kjeldgaard M, Thirup S, Polekhina G, Clark BF: Structure of the ternary complex of EF-Tu: macromolecular mimicry in translation. *Trends Biochem. Sci.* 3 (1996), 81-82

Oakley JL, Pascale LA, Coleman JE: *Biochemistry* 14 (1975), 4684-4691

Ogawa T, Tomita K, Ueda , K Uozumi Tund Masaki H: A Cytotoxic Ribonuclease Targeting Specific Transfer RNA Anticodons. *Science* 283 (1999), 2097-2100

Ohama T, Yang DC und Hatfield DL: Selenocysteine tRNA and Serine tRNA Are Aminoacylated by the Same Synthetase but May Manifest Different Identities with respect to the Long Extra Arm. *Arch. Biochem. Biophys.* 315 (1994), 293-301

Onesti S, Miller AD und Brick P: The crystal structure of the lysyl-tRNA synthetase (LysU) from *Escherichia coli*. *Structure* 3 (1995), 163-176

Osswald M, Döring T und Brimacombe R: The ribosomal neighbourhood of the central fold of tRNA: cross-links from position 47 of tRNA located at the A P or E site. *Nucleic Acids Res.* 23 (1995), 4635-4641

Ott G, Schiesswohl M, Kiesewetter S, Förster C, Arnold L, Erdmann VA und Sprinzl M: Ternary complexes of *Escherichia coli* aminoacyl-tRNAs with elongation factor Tu and GTP: thermodynamic and structural studies. *Biochim. Biophys. Acta* 1050 (1990), 222-225

Paetzel M, Strynadka NCJ, Tschantz WR, Casareno R, Bullinger PR und Dalbey RE: Use of Site-directed Chemical Modification to Study an Essential Lysine in E coli Leader Peptidase. *J. Biol. Chem.* 272 (1997), 9994-10003

Park SJ, Hou YM, Schimmel P: A single base pair affects binding and catalytic parameters in the molecular recognition of a transfer RNA. *Biochemistry* 28 (1989), 2740-2746

Pavlov MY, Freistroffer DV, Dincbas V, MacDougall J, Buckingham RH, Ehrenberg M: A direct estimation of the codon context effect on the efficiency of termination. *J. Mol. Biol.* 284 (1998), 579-590

Pavlov MY, Freistroffer DV, Heurgue-Hamard V, Buckingham RH und Ehrenberg M: Release Factor RF3 Abolishes Competition Between Release Factor RF1 and Ribosome Recycling Factor (RRF) for a ribosome binding site. *J. Mol. Biol.*273 (1997), 389-401

Pavlov MY, Freistroffer DV, MacDougall J, Buckingham RH und Ehrenberg M: Fast recycling of *Escherichia coli* ribosomes requires both ribosome recycling factor (RRF) and release factor RF3. *EMBO* 16 (1997), 4134-4141

Payne RC, Nichols BP, Hecht SM: Escherichia coli tryptophan synthase: synthesis of catalytically competent alpha subunit in a cell-free system containing preacylated tRNAs. *Biochemistry* 26 (1987), 3197-3205

Pedersen WT und Curran JF: Effects of the Nucleotide 3' to an Amber Codon on Ribosomal Selection Rates of Suppressor tRNA and Release Factor-1. *J. Mol. Biol.*219 (1991), 231-241

Pel HJ, Moffat JG, Ito K, Nakamura Y und Tate WP: *Escherichia coli* release factor 3: Resolving the paradox of a typical G protein structure and atypical function with guanine nucleotides. *RNA* 4 (1998), 47-54

Peterson ET und Uhlenbeck OC: Determination of Recognition Nucleotides for *Escherichia coli* Phenylalanyl-tRNA Synthetase. *Biochemistry* 31 (1992), 10380-10389

Petrullo LA, Gallagher PJ, Elseviers D: The role of 2-methylthio-N6-isopentenyladenosine in readthrough and suppression of nonsense codons in Escherichia coli. *Mol. Gen. Genet.* 190 (1983), 289-294

Phillips-Jones MK, Watson FJ und Martin R: The 3' Codon Context Effect on UAG Suppressor tRNA is Different in *Escherichia coli* and Human Cells. *J. Mol. Biol.*233 (1993), 1-6

Poole ES, Brimacombe R, Tate WP: Decoding the translational termination signal: the polypeptide chain release factor in Escherichia coli crosslinks to the base following the stop codon. *RNA* 3 (1997), 974-982

Poole ES, Brown CM und Tate WP: The identity of the base following the stop codon determines the efficiency of in vivo translational termination in Escherichia coli. *EMBO J.* 14 (1995), 151-158

Poole ES, Major LL, Mannering SA, Tate WP: 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 (1998), 954-960

Prelich G: Suppression Mechanisms - themes from variations. *TIG* 15 (1999), 261-266

Prescott CD und Kornau H: Mutations in *E. coli* 16S rRNA that enhance and decrease the activity of a suppressor tRNA. *Nucleic Acids Res.* 20 (1992), 1567-1571

Prescott CD, Kleuvers B und Göringer HU: A rRNA-mRNA base pairing model for UGA-dependent termination. *Biochimie* 73 (1991), 1121-1129

Pütz J, Florentz C, Benseler F und Giege R: A single methyl group prevents the mischarging of a tRNA. *Struc. Biol.* 1 (1994), 580-582

Raftery LA und Yarus M (1987): Systematic alterations in the anticodon arm make $tRNA^{Glu}$-SuOc a more efficient suppressor. *EMBO J.* 6, 1499-1506

Raftery LA, Bermingham Jr JR und Yarus M: Mutation in the D Arm Enables a Suppressor with a CUA Anticodon to Read Both Amber and Ochre Codons in *Escherichia coli. J. Mol. Biol.*190 (1986), 513-517

Ramesh V, Mayer C, Dyson MR, Gite S und RajBhandary UL: Induced fit of a peptide loop of methionyl-tRNA formyltransferase triggered by the iniator tRNA substrate. *PNAS* 96 (1999), 875-880

Ramesh V, Varshney U und Rajbhandary UL: Intragenic suppression in tRNA: Evidence for crosstalk between the D and the T stems. *RNA* 3 (1997), 1220-1232

Reichert A, Rothbauer U und Mörl M: Processing and Editing of Overlapping tRNAs in Human Mitochondria. *J. Biol. Chem.* 273 (1998), 31977-31984

Reilly RM und RajBhandary L: A Single Mutation in Loop IV of *Escherichia coli* SuIII tRNA Blocks Processing at Both 5'- and 3'-Ends of the Precursor tRNA. *J. Biol. Chem.* 261 (1986), 2928-2935

Rennell D, Bouvier SE, Hardy LW und Poteete AR: Systematic Mutation of Bacteriophage T4 Lysozyme. *J. Mol. Biol.*222 (1991), 67-87

Resto E, Iida A, Van Cleve MD und Hecht SM: Amplification of protein expression in a Cell free system. *Nucleic Acids Res.* 20 (1990), 5979-5983)

Reuven NB und Deutscher MP: Substitution of the 3' terminal adenosine residue of transfer RNA *in vivo. PNAS* 90 (1993), 4350-4353

Reuven NB, Deutscher MP: Multiple exoribonucleases are required for the 3' processing of Escherichia coli tRNA precursors in vivo. *FASEB J.* 1 (1993), 143-148

Reuven NB, Zhou Z und Deutscher MP: Functional Overlap of tRNA Nucleotidyltransferase Poly(A) Polymerase I and Polynucleotide Phosphorylase. *J. Biol. Chem.* 272 (1997), 33255-33259

Richter D, Herrlich P, Schweiger M: Phage DNA directed enzyme synthesis in vitro system from yeast mitochondria. *Nat. New Biol*. 238 (1972), 74-76

Ringquist S, Schneider D, Gibson T, Baron C, Böck A und Gold L: Recognition of the mRNA selenocysteine insertion sequence by the specialized translational elongation factor SELB. *Gen. Develop*. 8 (1994), 376-385

Ringquist S, Shinedling S, Barrick D, Green L, Binkley J,Stormo GD und Gold L: Translation initiation in *Escherichia coli*: sequences within the ribosome-binding site. *Mol. Microbiol.* 6 (1992), 1219-1229

Rinke-Appel J, Jünke N, Brimacombe R, Dokudovskaya S, Dontsova O und Bogdanov A: Site-directed cross-linking of mRNA analogues to 16S ribosomal RNA; a comlete scan of cross-links from all positions between '+1' and '+16' on the mRNA downstream from the decoding site. *Nucleic Acids Res.* 21 (1993), 2853-2859

Rinke-Appel J, Jünke N, Osswald M und Brimacombe R: The ribosomal environment of tRNA: Crosslinks to rRNA from positions 8 and 21:1 in the central fold of tRNA located at the A P or E-site. *RNA* 1 (1995), 1018-1028

Robertson HD, Altman S, Smith JD: Purification and properties of a specific Escherichia coli ribonuclease which cleaves a tyrosine transfer ribonucleic acid presursor. *J. Biol. Chem.* 247 (1972), 5243-5251

Robertson SA, Ellman JA und Schultz PG: A General and Efficient Route for Chemical Aminoacylation of Transfer RNAs. *J. Am. Chem. Soc*. 113 (1991), 27222-2729

Robertson SA, Noren CJ, Anthony-Cahill SJ, Griffith MC und Schultz PG: The use of 5'-phospho-2 deoxiribocytidylylriboadenosine as a facile route to chemical aminoacylation of a tRNA. *Nucleic Acids Res.* 17 (1989), 9649-9660

Rodnina MV, Savelsbergh A, Katunin AI und Wintermeyer W: Hydrolysis of GTP by elongation factor G drives tRNA movement on the ribosome. *Nature* 385 (1997), 37-41

Romier C, Reuter K, Suck D und Ficner R: Crystal structure of tRNA-guanine transglycosylase: RNA modification by base exchange. *EMBO* 15 (1996), 2850-2857

Rong M, Durbin RK, McAllister WT: Templete Strand switching by T7 RNA Polymerase. *J. Biol. Chem.* 273 (1989), 10253-10260

Rossmanith W: Processing of Human Mitochondrial $tRNA^{Ser(AGY)}_{GCU}$: A Novel Pathway in tRNA Biosynthesis. *J. Mol. Biol.*265 (1997), 365-371

Rothschild KJ und Gite S: tRNA-mediated protein engineering. *Cur. Op. Biotechnol*. 10 (1999), 64-70

Rould MA, Perona JJ und Steitz TA: Structural basis of anticodon loop recognition by glutaminyl-tRNA synthetase. *Nature* 352 (1991), 213-218

Ruusala T, Ehrenberg M und Kurland CG: Is there proofreading during polypeptide synthesis? *EMBO* J 1 (1982), 741-745

Ryden M, Murphy J, Martin R, Isaksson L und Gallant J: Mapping and Complementation Studies of the Gene for Release Factor 1. *J. Bacteriol*. 168 (1986), 1066-1069

Ryden SM und Isaksson LA: A Temperature-Sensitive Mutant of *Escherichia coli* that Shows Enhanced Misreading of UAG/A and Increased Efficiency for Some tRNA Nonsense Suppressors. *Mol. Gen. Genet.* 193 (1984), 38-45

Saks M und Sampson JR: Variant minihelix RNAs reveal sequence-specific recognition of the helical $tRNA^{Ser}$ acceptor stem by E coli seryl-tRNA synthetase. *EMBO* 15 (1996), 2843-2849

Saks ME, Sampson JR, Nowak MW, Kearney PC, Du F, Abelson JN, Lester HA und Dougherty DA: An Engineered Tetrahymena $tRNA^{Gln}$ for *in vivo* Incorporation of Unnatural Amino Acids into Proteins by Nonsense Suppression. *J. Biol. Chem.* 271 (1996), 23169-23175

Sampson JR und Saks M: Contributions of discrete $tRNA^{Ser}$ domains to aminoacylation by *E. coli* seryl-tRNA synthetase: a kinetic analysis using model RNA substrates. *Nucleic Acids Res.* 21 (1993), 4467-4475

Sampson JR und Uhlenbeck OC: Biochemical and physical characterization of an unmodified yeast phenylalanine transfer RNA transcribed *in vitro*. *PNAS* 85 (1988), 1033-1037

Sampson JR, Behlen LS, DiRenzo AB und Uhlenbeck OC: Recognition of Yeast $tRNA^{Phe}$ by Its Cognate Yeast Phenylalanyl-tRNA Synthetase: An Analysis of Specificity. *Biochemistry* 31 (1992), 4161-4167

Samuelsson T, Boren T, Johansen T und Lustig F: Properties of a Transfer RNA Lacking Modified Nucleosides. *J. Biol. Chem.* 263 (1988), 13692-13699

Sanger F, Nicklen S, Coulson AR : DNA sequencing with chain-terminating inhibitors. *PNAS* 74:12 (1977), 5463-5467

Sanni A, Walter P, Boulanger Y, Ebel J und Fasiolo F: Evolution of aminoacyl-tRNA synthetase quaternary structure and activity: Saccharomyces cerevisiae mitochondrial phenylalanyl-tRNA synthetase. *PNAS* 88 (1991), 8387-8391

Schedl P, Primakoff P: Mutants of Escherichia coli thermosensitive for the synthesis of transfer RNA. *PNAS* 70 (1973), 2091-2095

Schedl P, Roberts J und Primakoff P: *In vitro* Processing of E coli tRNA Precursors. *Cell* 8 (1976), 581-594

Schenborn ET, Mierendorf RC: A novel transcription property of SP6 and T7 RNA polymerases: dependence on template structure. *Nucleic Acids Res.* 13 (1985), 6223-6236

Scherzinger E, Herrlich P, Schweiger M: Transcription of T3 and T7 early genes by T3 and T7 RNA polymerases. Mol. Gen. Genet. 118 (1972), 67-77

Schilling-Bartetzko S, Bartetzko A, Nierhaus KH: Kinetic and thermodynamic parameters for tRNA binding to the ribosome and for the translocation reaction. *J. Biol. Chem*. 267 (1992), 4703-4712

Schimmel P und Alexander R: Diverse RNA substrates for aminoacylation: Clues to origins? *PNAS* 95 (1998), 10351-10353

Schimmel P und de Pouplana LR: Footprints of aminoacyl-tRNA synthetases are everywhere. TIBS 25 (2000), 207-209

Schüll C und Beier H: Three Tetrahymena $tRNA^{Gln}$ isoacceptors as tools for studying unorthodox codon recognition and codon context effects during protein synthesis *in vivo. Nucleic Acids Res.* 22 (1994), 1974-1980

Schultz DW und Yarus M: tRNA Structure and Ribosomal Function I tRNA Nucleotide 27-43 Mutations Enhance First Position Wobble. *J. Mol. Biol.*235 (1994a), 1381-1394

Schultz DW und Yarus M: tRNA Structure and Ribosomal Function II Interaction Between Anticodon Helix and other tRNA Mutations. *J. Mol. Biol.*235 (1994b), 1395-1405

Schweiger M, Herrlich P: DNA-directed enzyme synthesis in vitro. *Curr. Top. Microbiol. Immunol.* 65 (1974), 59-132

Schweiger M, Herrlich P, Milette RL: Gene expression in vitro from deoxyribonucleic acid of bacteriophage T7. *J. Biol. Chem.* 246:22 (1971), 6707-6712

Sharp PM, Bulmer M: Selective differences among translation termination codons. *Gene* 63 (1988), 141–145

Sherman JM und Soll D: Aminoacyl-tRNA synthetases optimize both cognate tRNA recognition and discrimination against noncognate tRNAs. *Biochemistry* 35 (1996), 601-607

Shi P, Maizels N und Weiner AM: CCA addition by tRNA nucleotidyltransferase: polymerization without translocation. *EMBO* 17 (1998), 3197-3206

Shields TP, Mollova E, Marie LS, Hansen MR und Pardi A: High performance liquid chromatography purification of homogenous-lengh RNA produced by trans cleavage with a hammerhead ribozyme. *RNA* 5 (1999), 1259-1267

Shine J und Dalgarno L: The 3‘-terminal sequence of *Escherichia coli* 16S ribosomal RNA: complementarity to nonsense triplets and ribosome binding sites. *PNAS* 71 (1974), 1342-1346

Short GF, Golovine SY und Hecht SM: Effects of release factor 1 on in vitro protein translation and the elaboration of proteins containing unnatural amino acids. *Biochemistry* 28 (1999), 8808-8819

Sipley J und Goldman E: Use of ribosomal mutants to probe mechanisms of programmed translational frameshifts in *Escherichia coli.* in: The Translational Apparatus. ed. by Nierhaus KH et al. *Plenum Press New York* 1993, 375-384

Smith D und Yarus M: Transfer RNA Structure and Coding Specificity I Evidence that a D-arm Mutation Reduces tRNA Dissociation from the Ribosome. *J. Mol. Biol.*206 (1989a), 489-501

Smith D und Yarus M: Transfer RNA Structure and Coding Specificity. II. A D-arm Tertiary Interaction that Restricts Coding Range. *J. Mol. Biol.*206 (1989b), 503-511

Smith D und Yarus M: tRNA–tRNA interactions within Cellular ribosomes. *PNAS* 86 (1989c), 4397-4401

Somogyi P, Jenner AJ, Brierley I und Inglis SC: Ribosomal Pausing during Translation of an RNA Pseudoknot. *Mol. Cel. Biol*. 13 (1993), 6931-6940

Sonar S, Lee CP, Coleman M, Patel M, Liu X, Marti T, Khorana HG, RajBhandary UL, Rothschild KJ: Site-directed isotope labelling and FTIR spectroscopy of bacteriorhodopsin. *Nat. Struct. Biol.* 1 (1994), 512-517

Spacciapoli P, Doviken L, Mulero JJ und Thurlow DL: Recognition of tRNA by the Enzyme ATP/CTP:tRNA Nucleotidyltransferase. *J. Biol. Chem.* 264 (1989), 3799-3805

Spanjaard RA, Chen K, Walker JR, van Duin J: Frameshift suppression at tandem AGA and AGG codons by cloned tRNA genes: assigning a codon to argU tRNA and T4 tRNA(Arg). *Nucleic Acids Res.* 18 (1990), 5031-5036

Spirin AS, Baranov VI, Ryabova LA, Ovodov SY und Alakhov YB: A Continous Cell-Free Translation System Capable of Producing Polypeptides in High Yield. *Science* 242 (1988), 1162-1164

Sprinzl M, Cramer F: The -C-C-A end of tRNA and its role in protein biosynthesis. *Prog. Nucleic Acid Res. Mol. Biol.* 22 (1979), 1-69

Sprinzl M, Steegborn C, Hübel F, Steinberg S: Compilition of tRNA sequences and sequences of tRNA genes. Nucleic Acids Res. 24 (1996), 68-72

Sprinzl M, Vassilenko KS, Emmerich J, Bauer F: (20 December, 1999) http://www.uni-bayreuth.de/departments/biochemie/trna/

Stark H, Orlova EV, Rinke-Appel J, Jünke N, Mueller F, Rodnina M, Wintermeyer W Brimacombe R und van Heel M: Arrangement of tRNAs in Pre- and Posttranslocational Ribosomes Revealed by Electron Cryomicoscopy. *Cell* 88 (1997), 19-28

Steege DA: A nucleotide change in the anticodon of an Escherichia coli serine transfer RNA results in supD- amber suppression. *Nucleic Acids Res.* 11 (1983), 3823-3832

Sterner T, Jansen M und Hou Y: Structural and functional accommodation of nucleotide variations at a conserved tRNA tertiary base pair. *RNA* 1 (1995), 841-851

Steward LE, Collins CS, Gilmore MA, Carlson JE, Ross JBA, Chamberlin AR: In Vitro Incorporation of Fluorescent Probes into beta-Galactosidase. *J. Am Chem. Soc*. 119 (1997), 6-11.

Stiege W und Erdmann VA: The potentials of the *in vitro* protein biosynthesis system. *J. Biotechnol.* 41 (1995), 81-90

Stormo GD, Schneider TD und Gold L: Quantitative relationship between nucleotide sequence and functional activity. *Nucleic Acids Res.* 14 (1986), 6661-6679

Suzuki T, Ueda T und Watanabe K: The 'polysemous' codon - a codon with multiple amino acid assignment caused by dual specificity of tRNA identity. *EMBO* 16 (1997), 1122-1134

Takai K, Horie N, Yamaizumi Z, Nishimura S, Miyawawa T und Yokoyama S: Recognition of UUN codons by two leucine tRNA-Species from Escherichia coli. *FEBS Lett.* 344 (1994), 31-34

Takai K, Takaku H und Yokoyama S: Codon-reading specificity of an unmodified form of *Escherichia coli* $tRNA^{Ser}1$ in Cell-free protein synthesis. *Nucleic Acids Res.* 24 (1996), 2894-2899

Tamura K, Asahara H, Nameki N, Himeno H, Hasegawa T und Shimizu M: *In vitro* study of *E. coli* tRNA identity elements. Nucl. Acids Symp. Ser. 199227, 143-144

Tamura K, Himeno H, Asahara H, Hasegawa T und Shimizu M: *In vitro* study of *E. coli* $tRNA^{Arg}$ and $tRNA^{Lys}$ identity elements. *Nucl. Acid. Res.*20 (1992), 2335-2339

Tate WP, Brown CM: Translational termination: "stop" for protein synthesis or "pause" for regulation of gene expression. *Biochemistry* 31 (1992), 2443–2450

Tate WP, Poole ES, Dalphin ME, Major LL, Crawford DJ und Mannering SA: The translational stop signal: codon with a kontext, or extendet factor recognition element? *Biochimie* 78 (1996), 945-952

Thomas LK, Dix DB und Thompson RC: Codon choice and gene expression: synonymous codons differ in their ability to direct aa-tRNA binding to ribosomes *in vitro. PNAS* 85 (1988), 4242-4246

Thompson R und Karim A: The accuracy of protein biosynthesis is limited by ist speed. high fidelity selection by ribosomes of amino acyl-tRNA ternary complexes containing GTP[γs]. *PNAS* 79 (1982), 4922-4926

Thompson R, Dix D und Karim A: The reaction of ribosomes with elongation factor Tu*GTP complexes. Aminoacyl-tRNA independent reactions in the elongation cycle determine the accuracy of protein synthesis. J. Biol. Chem. 261 (1986), 4868-4874

Thorbjarnardottir S, Dingermann T, Rafnar T, Andresson OS, Söll D und Eggertsson G: Leucine tRNA family of Escherichia coli: nucleotide sequence of the supP (Am) suppressor gene. *J. Bacteriol.* 161 (1985), 219-222

Tomita K, Ueda T und Watanabe K: The presence of pseudouridine in the anticodon alters the genetic code: a possible mechanism for assignment of the AAA lysine codon as asparagine in echinoderm mitochondria. *Nucleic Acids Res.* 27 (1999), 1683-1689

Trezeguet V, Edwards H und Schimmel P: A Single Base Pair Dominates over the Novel Identity of an *Escherichia coli* Tyrosine tRNA in Saccharomyces cerevisiae. *Mol. Cel. Biol*. 11 (1991), 2744-2751

Tuite MF und Stansfield I: Termination of protein synthesis. *Mol. Biol. Rep*. 19 (1994), 171-181

Turcatti G, Nemeth K, Edgerton MD, Meseth U, Talabot F, Peitsch M, Knowles J, Vogel H und Chellet A: Probing the Structure and Function of the Tachykinin Neurokinin-2 Receptor through Biosynthetic Incorporation of Fluorescent Amino Acids at Specific Sites. *J. Biol. Chem.* 271 (1996), 19991-19998

Ueda Y, Kumagai I und Miura K: The effects of a unique D-loop structure of a minor $tRNA^{Leu}_{UUA}$ from Streptomyces on its structural stability and amino acid accepting activity. *Nucleic Acids Res.* 20 (1992), 3911-3917

Urban C, Zerfaß K, Fingerhut C und Beier H: UGA suppression by $tRNA^{TRP}_{CmCA}$ occurs in diverse virus RNAs due to a limited influence of the codon context. *Nucleic Acids Res.* 24 (1996), 3424-3430

Valle RPC und Morch M: Stop making sense or Regulation at the level of termination in eukaryotic protein synthesis. *FEBS* 235 (1988), 1-15

Varani G, und McClain WH: The GU wobble base pair – A fundamental building block of RNA structure crucial to RNA function in diverse biological systems. *EMBO Reports* 1 (2000), 18-23

Varshney U, Lee C und RajBhandary UL: Direct Analysis of Aminoacylation Levels of tRNAs *in vivo. J. Biol. Chem.* 266 (1991), 24712-24718

Vijgenboom E, Vink T, Kraal B und Bosch L: Mutants of the elongation factor EF-Tu a new class of nonsense suppressors. *EMBO* 4 (1985), 1049-1052

Viswanathan M, Dower KW und Lovett ST: Identification of a Potent DNase Activity Associated with RNase T of *Escherichia coli. J. Biol. Chem.* 273 (1998), 35126-35131

Wagner EGH, Jelenc PC, Ehrenberg M und Kurland CG: Rate of elongation of polyphenylalanine *in vitro. Eur. J. Biochem*. 122 (1982), 193-197

Wagner T und Sprinzl M: The Complex Formation between *Escherichia coli* Aminoacyl-tRNA Elongation Factor Tu and GTP - The Effect of the Side-Chain of the Amino Acid Linked to tRNA. *Eur. J. Biochem.* 108 (1980), 213-221

Weissenbach J und Grosjean H: Effect of threonylcarbomoyl modification (t6A) in yeast tRNA ArgIII on Codon-Anticodon and anticodon-anticodon interactions. A thermodynamic and kinetic evolution. *Eur. J. Biochem.* 116 (1981), 207-213

Weygand-Durasevic I, Nalaskowska M und Söll D: Coexpression of Eukaryotic $tRNA^{Ser}$ and Yeast Seryl-tRNA synthetase Leads to Functional Amber Suppression in *Escherichia coli. J. Bacteriol.* 176 (1994), 232-239

Weygand-Durasevic I, Rogers MJ und Söll D: Connecting Anticodon Recognition with the Active Site of *Escherichia coli* Glutaminyl-tRNA Synthetase. *J. Mol. Biol.*240 (1994), 111-118

Wiborg O, Andersen C, Knudsen CR, Clark BFC und Nyborg J: Mapping *Escherichia coli* Elongation Factor Tu Residues Involved in Binding of Aminoacyl-tRNA. *J. Biol. Chem.* 271 (1996), 20406-20411

Wilken J und Kent SBH: Chemical protein synthesis. *Cur. Op. Biotechnol*. 9 (1998), 412-426

Wilson RK, Roe BA: Presence of the hypermodified nucleotide N6-(delta 2-isopentenyl)-2-methylthioadenosine prevents codon misreading by Escherichia coli phenylalanyl-transfer RNA. *PNAS* 86 (1989), 409-413

Wu M, Filley SJ, Xiong J, Lee JJ und Hill KAW: A Cysteine in the C-Terminal Region of Alanyl-tRNA Synthetase Is Important for Aminoacylation Activity. *Biochemistry* 33 (1994), 12260-12266

Wu X, Iyengar P und RajBhandary UL: Ribosome-initiator tRNA complex as an intermediate in translation initiation in *Escherichia coli* revealed by use of mutant initiator tRNAs and specialized ribosomes. *EMBO* 15 (1996), 4734-4739

Xiao G, Parsons JF, Tesh K, Armstrong RN, Gilliland GL: Conformational Changes in the crystal structure of rat gluthathione transferase M1-1 with global substitution of 3-fluorotyrosine for tyrosine. J. Mol. Biol. 281 (1998), 323-339

Yabuki T, Kigawa T, Dohmae N, Takio K, Terada T, Ito Y, Laue ED, Cooper JA, Kainosho M und Yokoyama S: Dual amino acid-selective and site-directed stable-isotope labelling of the human c-Ha-Ras protein by cell-free synthesis. *J. Biomol. NMR* 11 (1998), 295-306

Yan W und Francklyn C: Cytosine 73 Is a Discriminator Nucleotide *in vivo* for Histidyl-tRNA in *Escherichia coli*. *J. Biol. Chem.* 269 (1994), 10022-10027

Yarus M: Isolation and Properties of a Plasmid which Expresses the *E. coli* Su^+7 Amber Suppressor tRNA Gene. *Mol. gen. Genet*. 170 (1979), 291-298

Yarus M, Cline SW, Wier P, Breeden L und Thompson RC: Actions of the Anticodon Arm in Translation on the Phenotypes of RNA Mutants. *J. Mol. Biol.*192 (1986a), 235-255

Yarus M: Translational efficiency of Transfer RNA's: Uses of an Extended Anticodon. *Science* 218 (1982), 646-652

Yarus M, Cline S, Raftery L, Wier P, Bradley D: The Translational efficiency of tRNA Is a Property of the Anticodon Arm. *J. Biol. Chem.* 261 (1986b), 10496-10505

Yoshimura M, Inokuchi H und Ozeki H: Identification of transfer RNA suppressors in *Escherichia coli* IV Amber suppressor Su+6 a double mutant of a new species of leucine tRNA. *J. Mol. Biol.*177 (1984), 627-644

Yue D, Kintanar A und Horowitz J: Nucleoside Modifications Stabilize Mg^{2+} Binding in *Escherichia coli* $tRNA^{Val}$: An Imino Proton NMR Investigation. *Biochemistry* 33 (1994), 8905-8911

Yue D, Weiner AM und Maizels N: The CCA-adding Enzyme Has a Single Active Site. *J. Biol. Chem.* 273 (1998), 29693-29700

Zenkova M, Ehresmann C, Caillet J, Springer M, Karpova G und Ehresmann B: A novel approach to introduce site-directed specific cross-links within RNA-protein complexes. *Eur. J. Biochem.* 231 (1995), 726-735

Zerfaß K, Beier H: Pseudouridine in the anticodon G psi A of plant cytoplasmic tRNA(Tyr) is required for UAG and UAA suppression in the TMV-specific context. *Nucleic Acids Res*. 20:22 (1992) 5911-5918

Zerfass K, Beier H: The leaky UGA termination codon of tobacco rattle virus RNA is suppressed by tobacco chloroplast and cytoplasmic tRNAs(Trp) with CmCA anticodon. *EMBO J*. 11 (1992), 4167-4173.

Zhang S, Ryden-Aulin M und Isaksson LA: Functional Interaction Between Release Factor one and P-site Peptidyl-tRNA on the Ribosome. *J. Mol. Biol.*261 (1996), 98-107

Zhang S, Ryden-Aulin M, Kirsebom LA und Isaksson LA: Genetic implication for an interaction between release factor one and ribosomal protein L7/L12 *in vitro. J. Mol. Biol.*242 (1994), 614-618

Zhao XZ und Horne DA: The Role of Cysteine Residues in the Rearrangement of Uridine to Pseudouridine by Pseudouridine Synthase I. *J. Biol. Chem.* 272 (1997), 1950-1955

Zhang B, Cech TR: Peptidyl-transferase ribozymes: trans reactions, structural characterization and ribosomal RNA-like features. Chem. Biol. 16 (1998), 539-553

Zhongwai L und Deutscher MP: Maturation Pathways for E coli tRNA Precursors: A Random Multienzyme Process *In vivo. Cell* 86 (1996), 503-512

Zhu L, Cudny H und Deutscher MP: A Mutation in *Escherichia coli* tRNA Nucleotidyltransferase That Affects Only AMP Incorporation Is in a Sequence Often Associated with Nucleotide-binding Proteins. *J. Biol. Chem.* 261 (1986), 14875-14877

Zinoni F, Heider J und Böck A:Heider J, Böck A: Features of the formate dehydrogenase mRNA necessary for decoding of the UGA codon as selenocysteine. *PNAS* 87 (1990), 4660-4664

Zubay G, Cheong L und Gefter M: DNA-Directed Cell-Free Synthesis of Biologically Active Transfer RNA: su^+_{III} Tyrosyl-tRNA. *PNAS* 368 (1971), 2195-2197

Zubay G: In vitro synthesis of protein in microbial systems. *Annu. Rev. Genet*. 7 (1973), 267-287

9.1 Eigene Publikationen

Gerrits M, Merk H, Stiege W und Erdmann VA: 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. (herausgegeben durch Barciszewski J und Clark BFC) *Kluwer Academic Publishers Dordrecht* (1999), ISBN 0-7923-5861-9

Gerrits M, Tausch K, Erdmann VA: n+1-activity of T7-RNA-Polymerase depends on temperature. (in Bearbeitung)

Gerrits M, Stiege W und Erdmann VA: Translational efficiency of *in vitro* transcribed *amber* suppressor tRNAs in cell-free protein biosynthesis. (in Bearbeitung)

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

Gerrits M, Stiege W und Erdmann VA: The translational efficiency of *amber*-Suppressor-tRNAs. - Advanced workshop: RNA Biochemistry & Biotechnology, 10-16.10.1998, Poznan, Polen - Abstract, Poster