

---

## VI LITERATURVERZEICHNIS

---

### A

**Abecassis**, V., Pompon, D., Truan, G., **2000**. High efficiency family shuffling based on multi-step PCR and *in vivo* DNA recombination in yeast: statistical and functional analysis of a combinatorial library between human cytochrome P450 1A1 and 1A2. Nucleic Acid Res., 28: E88

**Altschul**, S.F., Gish, W., Miller, W., Myers, E.W., Lipmann, D.J., **1990**. Basic local alignment search tool. J. Mol. Biol. 215: 403-410

**Archibald**, A.R., Bundle, D.R., Dougan, G., Glauner, B., Heckels, J.E., Lambert, P.A., Messner, P., Minnikin, D.E., Old, D.C., Parratt, D., Russell, R.R.B., Schwartz, U., Sleytr, U.B., Virji, M., **1988**. Bacterial Cell Surface Techniques. John Wiley& Sons London., Great Britain by Bath Press Ltd., Bath, Avon

### B

**Beverdige**, T.J., Pouwels, P.H., Sára, M., Kotiranta, A., Lounatmaa, K., Kari, K., Haapasalo, M., Egelseer, E.M., Schocher, I., Sleytr, U.B., Morelli, L., Callegari, M.L., Nomellini, J.F., *et al.* **1997**. Functions of S-layers. FEMS Microbiol. Rev. 20: 99-149

**Bijsterveld**, N.R., Hettiarachchi, R.J.K., Peters, R., Prins, M.H., Levi, M., Büller, H.R., **1999**. Low-molecular weight heparins in venous and arterial thrombotic disease. Thromb. Haemostasis. 82: 139-147

**Black**, M.E., Newcomb, T.G., Wilson, H.M., Loeb, L.A., **1996**. Creation of drug-specific herpes simplex virus type 1 thymidine kinase mutants for gene therapy. Proc. Natl. Acad. Sci. USA. 93: 3525-3529

**Boder**, E.T., Wittrup, K.D., **1997**. Yeast surface display for screening combinatorial polypeptide libraries. Nat. Biotech. 15: 553-557

**Borsig**, L., Wong, R., Feramisco, J., Nadeau, D.R., Varki, N.M., Varki, A., **2001**. Heparin and cancer revisited: mechanistic connections involving platelets, P-selectin, carcinoma mucins, and tumor metastasis. Proc. Natl. Acad. Sci. USA. 98: 3352-3357

**Bouvet**, P., Belasco, J.G., **1992**. Control of RNase E mediated RNA degradation by 5'-terminal base paring in *E.coli*. Nature. 360: 488

**Brechtel**, E., Bahl, H., **1999**. In *Thermoanaerobacteum thermosulfurigenes* EM1 S-layer homology domains do not attach to peptidoglycan. J. Bacteriol. 181: 5017-5023

**Brodersen**, D.E., Nissen, P., **2005**. The social life of ribosomal proteins. FEBS J. 272: 2098-2108

### C

**Calaycay**, J., Pande, H., Lee, T., Borsi, L., Siri, A., Shively, J.E., Zardi, L., **1985**. Primary structure of a DNA- and heparin-binding domain (Domain III) in human plasma fibronectin. 260: 12136-12141

**Capila**, I., Linhardt, R.J., **2002** Heparin-Protein-Wechselwirkung. Angew. Chem. 114: 426-450

**Carter**, A.P., Clemons, W.M., Brodersen, D.E., Morgan-Warren, R.J., Wimberly, B.T., Ramakrishnan, V., **2000**. Functional insights from the structure of the 30S ribosomal subunit and its interaction with antibiotics. Nature. 407: 340-348

**Cadwell**, R.C., Joyce, G.F., **1992**. Randomization of genes by PCR mutagenesis. PCR Methods Appl. 2: 28-33

**Cadwell**, R.C., Joyce, G.F., **1994**. Mutagenic PCR. PCR Methods Appl. 3: 136-140

**Cerami**, C., Frevert, U., Sinnis, P., Takecs, B., Clavijo, P., Santos, M.J., Nussenzweig, V., **1992**. The basolateral domain of the hepatocyte plasma membrane bears receptors for the circumsporozoite protein of Plasmodium falciparum sporozoites. Cell 70: 1021-1033

**Chapeville**, F., Lipmann, F., von Ehrenstein, G., Weisblum, B., Ray, W.J., Benzer, S., **1962**. On the role of soluble ribonucleic acid encoding for amino acid. Proc. Natl. Acad. Sci. USA. 48: 1086-1092

---

## VI LITERATURVERZEICHNIS

---

- Charles**, A.F., Todd, A.R., **1940**. Observations on the structure of the barium salt of heparin. Biochemical Journal. 34: 112-118
- Chauvaux**, S., Matuschek, M., Beguin, P., **1999**. Distinct affinity of Binding Sites for S-layer homologous domains in *Clostridium thermocellum* and *Bacillus anthracis* cell envelopes. J. Bacteriol. 181: 2455-2458
- Chia**, J.S., Wu, H.L., Wang, H.W., Chen, D.S., Chen, P.J., **1997**. Inhibition of hepatitis delta virus genomic ribozyme self-cleavage by aminoglycosides. J. Biomed. Sci. 4: 208-216
- Chien**, C.T., Bartel, P.L., Sternglanz, R., Fields, S., **1991**. The two-hybrid system: a method to identify and clone genes for proteins that interact with a protein of interest. Proc. Natl. Acad. Sci. USA. 88: 9578-9582
- Chiu**, J., March, P.E., Lee, R., Tillett, D., **2004**. Site-directed, ligase-independent mutagenesis (SLIM): a single-tube methodology approaching 100% efficiency in 4 h. Nucleic Acid Res. 32:
- Coco**, W.E., Encell, L.P., Levinson, W.E., Crist, M.J., Loomis, A.K., Licato, L.L., Arendorf, J.J., Sica, N., Pienkos, P.T., Monticello, D.J., **2002**. Growth factor engineering by degenerate homoduplex gene family recombination. Nat. Biotech. 19:
- Coco**, W.E., Levinson, W.E., Crist, M.J., Hektor, H.J., Darzins, A., Pienkos, P.T., Squires, C.H., Monticello, D.J., **2001**. DNA shuffling method for generating highly recombinant genes and evolved enzymes. Nat. Biotech. 19: 354-359
- Collins**, M.D., Lawson P.A., Willemse A., Cordoba J.J., Fernandez-Garayzabal J., Garcia P., Cai J., Hippe H., Farrow J.A.E., **1994**. The phylogeny of the genus *Clostridium*: proposal of five new genera and eleven new species combinations. Int. J. Syst. Bacteriol. 44: 812-826.
- Crameri**, A., Raillard, S.A., Bermudez, E., Stemmer, W.P., **1998**. DNA shuffling of a family of genes from diverse species accelerates directed evolution. Nature. 391: 288-291
- D**
- Davies**, J., Gilbert, W., Gorini, L., **1964**. Streptomycin suppression and the code. Proc. Natl. Acad. Sci. USA. 51: 883-890
- Davies**, J., Gorini, L., Davis, B.D., **1965**. Misreading of RNA codewords induced by aminoglycoside antibiotics. Mol. Pharmacol. 1: 93-106
- Daugherty**, P.S., Olsen, M.J., Iverson, B.L., Georgiou, G., **1999**. Development of an optimized expression system for the screening of antibody libraries displayed on the *E.coli* surface. Protein Eng. 12: 613-621
- 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. USA. 57: 1010-1012
- Dworkin**, J., Tummurn, M.K.R., Blaser, M.J., **1995**. A lipopolysaccharide binding domain of the *Caulobacter fetus* S-layer protein resides within the conserved N-Terminus of a family of silent and divergent homologs. J. Bacteriol. 177: 1734-1741
- E**
- Earnshaw**, D.J., Gait, M.J., **1998**. Hairpin ribozyme cleavage catalysed by aminoglycoside antibiotics and the polyamine spermine in the absence of metal ions. Nucleic Acid Res. 26: 5551-5561
- Egelseer**, E.M., Leitner, K., Jarosch, M., Hotzy, C., Zayni, S., Sleytr, U.B., Sára, M., **1998**. The S-layer proteins of two *Bacillus stearothermophilus* wild-type strains are bound via their N-terminal region to a secondary cell wall polymer of identical chemical composition. J. Bacteriol. 180: 1488-1495
- Egelseer**, E.M., Schocher, I., Sára, M., Sleytr, U.B., **1995**. The S-layer from *Bacillus stearothermophilus* DSM 2358 function as an adhesion site for a high-molecular-weight amylase. J. Bacteriol. 177: 1444-1451
- Egelseer**, E.M., Schocher, I., Sleytr, U.B., Sára, M., **1996**. Evidence that an N-terminal S-layer protein fragment triggers the release of a cell-associated high-molecular-weight amylase in *Bacillus stearothermophilus* ATCC 12980. J. Bacteriol. 178: 5602-5609

---

## VI LITERATURVERZEICHNIS

---

**Ehrenberg**, L., Feorcsak, I., Solymosy, F., **1994**. Diethylpyrocarbonate in nucleic acid research. *Prog. Nucl. Acid Res. Mol. Biol.* 16: 189-262

**Emory**, S.A., Bouvet, P., Belasco, J.G., **1994**. A 5' terminal stem loop structure can stabilize mRNA in *Escherichia coli*. *Genes Dev.* 6: 135-48

**Engelhardt**, H., Peters, J., **1998**. Structural research on surface layer: A focus on stability, surface layer homology domains, and surface-layer-cell wall interaction. *J. Structural Biol.* 124: 276-302

**Erdmann**, V.A., Stiege, W., Henze, P.P., Ulbrich, N., **1989**. Therapeutic interventions on central cholinergic mechanisms in senile dementia. W. Zuckschwerdt Verlag, München, 45-54

### F

**Fields**, S., Song, O., **1989**. A novel genetic system to detect protein-protein interaction. *Nature*. 340: 245-246

**Figueiredo**, P., Roberts, R.L., Nester, E.W., **2004**. DARTs: A DNA-based *in vitro* polypeptide display technology. *Proteomics*. 4: 3128-3140

**Freedman**, M.D., **1992**. Pharmacodynamics, clinical indications, and adverse effects of heparin. *J Clin Pharmacol.* 32: 584-596

**Frey**, B., Suppmann, B., **1995**. Demonstration of the Expand PCR system's greater fidelity and higher yields with a *lacI*-based PCR fidelity assay. *Biochem. Inf.* 2:34-35

**Fukuda**, M., Bothner, B., Ramsamooj, P., Dell, A., Tiller, P.R., Varki, A., Klock, J.C., **1985**. Structures of sialylated fucosyl polylactosaminoglycans isolated from chronic myelogenous leukemia cells. *J. Biol. Chem.* 260: 12957-1297

### G

**Gates**, C.M., Stemmer, W.P.C., Kaptein, R., Schatz P.J. **1996**. Affinity selective isolation of ligands from peptide libraries through display on a lac repressor "headpiece dimer". *J. Mol. Biol.* 255: 373-386

**Gerusk**, G.M., Corey, M.J., Corey, E., Stray, J.E., Kawasaki, G.H., Vesella, R.L., **1997**. High-affinity peptide ligands to prostate specific antigen identified by polysome selection. *Biochem. Biophys. Res. Commun.* 232: 578-582

**Gold**, L.M., Schweiger M., **1969**. Synthesis of phage-specific  $\alpha$ - and  $\beta$ - glucosyl transferase directed by T-even DNA *in vitro*. *Proc. Natl. Acad. Sci. USA*. 62: 892-898

**Gorini**, L., **1974**. Streptomycin and misreading of the genetic code. In: Nomura M, Tissieres A, Lengyel P, eds. Ribosomes. Cold Spring Harbor, New York: Cold Spring Harbor Laboratory Press. pp 791-804

**Greener**, A., Callahan, M., **1994**. XL1-Red: a highly efficient random mutagenesis strain. *Strategies (Stratagene)*. 7: 32-34

**Georgiou**, G., Poetschke, H.L., Stathopoulos, C., Francisco, J.A., **1993**. Practical application of engineering gram-negative bacterial cell surface. *Trends Biotech.* 11: 6-10

### H

**Hajnsdorf**, E., Braun, F., Haugel-Nielsen, J., Le Derout J., Regnier, P., **1996**. Multiple degradation pathways of the rpsO mRNA of *E.coli*. RNase E interacts with the 5' and 3' extremities of the primary transcript. *Biochimie*. 78: 416-424

**Hanahan**, D., **1983**. Studies on transformation of *Escherichia coli* with plasmids. *J. Mol. Biol.* 166: 1-19

**Hanes**, J., Plückthun, A., **1997**. In vitro selection and evolution of functional proteins by using ribosome display. *Proc. Natl. Acad. Sci. USA*. 94: 4937

**Hanes**, J., Jermytus, L., Weber-Bornhauser, S., Bosshard, H.R., Plückthun, A., **1998**. Ribosome display efficiently selects and evolves high-affinity antibodies *in vitro* from immune libraries. *Proc. Natl. Acad. Sci. USA*. 95: 14130

---

## VI LITERATURVERZEICHNIS

---

- Hara**, H., Ymamoto, Y., Higashitana, A., Suzuki, H., Nishimura, Y., **1991**. Cloning, mapping, and characterization of the *Escherichia coli* prc gene, which is involved in C-terminal processing of penicillin-binding protein 3. *J.Bacteriol.* 173: 4799
- Harrop**, H.A., Coombe, D.R., Rider, C.C., **1994**. Heparin specifically inhibits binding of V3 loop antibodies to HIV-1 gp120, an effect potentiated by CD4 binding. *AIDS*. 8: 183-192
- 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
- Herrlich**, P., Schweiger, M., **1974**. DNA- and RNA-directed synthesis *in vitro* of phage enzymes. *Methods Enzymol.* 30: 654-669
- Hileman**, R.E., Fromm, J.R., Weiler, J.M., Linhardt, R.J., **1998**. Glycosaminoglycan-protein interactions: definition of consensus sites in glycosaminoglycan binding proteins. *Bioassay*. 20: 156-167
- Hileman**, R.E., Jennings, R.N., Linhardt, R.J., **1998**. Thermodynamic analysis of the heparin interaction with a basic cyclic peptide using isothermal titration calorimetry. *Biochemistry*. 37: 15231-15237
- Howell**, W.H., **1928**. The purification of Heparin and its chemical and physiological reactions. *Bull. Johns Hopkins Hosp.* 42: 199
- Huber**, C., Ilk, N., Rünzler, D., Egelseer, E.M., Weigert, S., Sleytr, U.B., Sára, M., **2005**. The three S-layer-like homolog motifs of the S-layer protein SbpA of *Bacillus sphaericus* CCM 2177 are not sufficient for binding to the pyruvylated secondary cell wall polymer. *Mol. Microbiol.* 55: 197-205
- I**
- Ilk**, N., Kosma, P., Puchberger, M., Egelseer, E.M., Mayer, H.F., Sleytr, U.B., Sára, M., **1999**. Structural and functional analyses of the secondary cell wall polymer of *Bacillus sphaericus* CCN 2177 that serves as an S-layer-specific anchor. *J. Bacteriol.* 181: 7643-7646
- J**
- Jermutus**, L., Honegger, A., Schwesinger, F., Hanes, J., Plückthun, A., **2000**. Tailoring *in vitro* evolution for protein affinity or stability. *Proc. Natl. Acad. Sci. USA*. 98: 75-80
- Jorpes**, E., Berstrom, Z., **1936**. 244: 253-256
- K**
- Kassam**, G., Manro, A., Braat, C.E., Louie, P., Fitzpatrick, S.L., Waisman, D.M., **1997**. Characterization of the heparin binding properties of annexin II tetramer. *J. Biol. Chem.* 272: 15093-15100
- Keiler**, K.C., Waller, P.R.H., Sauer, R.T., **1996**. Role of a peptide tagging system in degradation of proteins synthesized from damaged messenger RNA. *Science*. 271: 990-993
- Kieke**, M.C., Cho, B.K., Boder, E.T., Kranz, D.M., Wittrup, K.D. **1997**. Isolation of anti-T cell receptor scFv mutants by yeast surface display. *Protein Eng.* 19: 1303-1310
- Koenig**, A., Norgard-Sunnicht, K., Linhardt, R.J., Varki, A., **1998**. Differential interactions of heparin and heparan sulfate glycosaminoglycans with the selectins. Implications for the use of unfractionated and low molecular weight heparins as therapeutic agents. *J.Clin.Invest.* 101: 877-889
- Kolkman** J.A., Stemmer, W.P.C., **2001**. Directed evolution of proteins by exon shuffling. *Nat. Biotech.* 19: 423-428
- Komine**, Y., Kitabatake, M., Yokogawa, T., Nishikawa, K., Inokuchi, H., **1994**. A tRNA-like structure is present in 10Sa RNA, a small stable RNA from *Escherichia coli*. *Proc. Natl. Acad. Sci. USA*. 91: 9223-9227
- Kotiranta**, A., Haapasalo, M., Kari, K., Kerosuo, E., Olsen, I., Sorsa, T., Meurman, J.H., Lounatmaa, K., **1998**. Surface structure, hydrophobicity, phagocytosis, and adherence to matrix proteins of *Bacillus cereus* cells with and without the crystalline surface protein layer. *Infection and Immunity*. 66: 4895-4902

---

## VI LITERATURVERZEICHNIS

---

### **L**

**Laemmeli, U.K., 1970.** Cleavage of structural proteins during the assembly of the head of bacteriophage T4. Nature. 277: 680-685

**Lamla, T., 2002.** *In vitro* Selektion streptavidinbindender Peptide. Dissertation, FU Berlin

**Lamla, T., Erdmann, V.A., 2002.** Improved batch translation system based on *E.coli* extract. Cell-free translation systems, pp. 23-39. Springer Verlag, ISBN 3-540-42050-9

**Lecher, J., Sumper, M., 1987.** The primary structure of a prokaryotic glycoprotein. J. Biol. Chem. 262: 9724-9729

**Leigh, J.A., Wolfe R.S., 1983.** *Acetogenium kirui* gen. nov., sp. nov., a thermophilic acetogenic bacterium. Int. J. Syst. Bacteriol. 33: 886.

**Leung, D.W., Chen, E., Goeddel D.V., 1989.** A method for random mutagenesis of a defined DNA segment using a modified polymerase chain reaction. Technique 1:11-15

**Lindhorst, T.K., 2000.** Struktur und Funktion von Kohlenhydraten. Chemie in unserer Zeit 34: 38-52

**Lorimer, I.A.J., Pastan, I., 1995.** Random recombination of antibody single chain Fv sequences after fragmentation with DNaseI in the presence of Mn<sup>2+</sup>. Nucleic Acid Res. 23: 3067-3068

**Lupas, A., Engelhardt, H., Peters, J., Santarius, U., Volker, S., Baumeister, W., 1994.** Domain structure of the *Acetogenium kirui* surface layer revealed by electron crystallography and sequence analysis. J. Bacteriol. 176: 1224-1233

**Lutz, S., Ostermeier, M., Benkovic, S., 2001.** Rapid generation of incremental truncation libraries for protein engineering using  $\alpha$ -phosphothioate nucleotides. Nucleic Acid Res. 29: 1-7

**Lutz, S., Ostermeier, M., Moore, G.L., Maranas, C.D., Benkovic, S.J., 2001.** Creating multiple-crossover DNA libraries independent of sequence identity. PNAS. 98: 11248-11253

**Lyon, M., Deakin, J.A., Gallagher, J.T., 1994.** Liver heparan sulfate structure. A novel molecular design. J.Biol.Chem. 269: 11208

### **M**

**Mader, C., Huber, C., Moll, D., Sleytr, U.B., Sára, M., 2004.** Interaction of the crystalline bacterial cell surface layer protein SbsB and the secondary cell wall polymer of *Geobacillus stearothermophilus* PV72 assessed by real-time surface plasmon resonance biosensor technology. J.Bacteriol. 186: 1758-1768

**Makeyev, E.V., Kolb, V.A., Spirin, A.S., 1996.** Enzymatic activity of the ribosome-bound nascent polypeptide. FEBS Lett. 378: 166-170

**Malkin, L.I., Rich, A., 1967.** Partial resistance of nascent polypeptide chains to proteolytic digestion due to ribosomal shielding. J. Mol. Biol. 26: 329

**Mandel, M., Higa, A., 1970.** Calcium-dependent bacteriophage DNA infection. J.Mol. Biol. 53: 154

**Martinez, M.A., Pezo, V., Marlriere, P., Wan-Hobson, S., 1996.** Exploring the functional robustness of an enzyme by *in vitro* evolution. EMBO J. 15: 1203-1210

**Mattheakis, L.C., Bhatt, R.R., Dower, W.J., 1994.** An *in vitro* polysome display system for identifying ligands from very large peptide libraries. Proc. Natl. Acad. Sci. USA. 91: 9022-9026

**Mattheakis, L.C., Dias, J.M., Dower, W.J., 1996.** Cell-free synthesis of peptide libraries displayed on polysomes. Methods Enzymol.: 267: 195-207

**Matsuura, T., Miyai, K., Trakulnaleamsai, S., Yomo, T., Shima, Y., Miki, S., Yamamoto, K., Urabe, I., 1999.** Evolutionary molecular engineering by random elongation mutagenesis. Nat. Biotech. 17: 58-61

---

## VI LITERATURVERZEICHNIS

---

- Meyer**, A., Neide, E., **1904**. In: Neide E.: Botanische Beschreibung einiger sporenbildenden Bakterien. Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene. Abteilung II. 12: 337-352.]
- Merk**, H., Stiege, W., Tsumot, 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
- Mesnage**, S., Fontaine, T., Mignot, T., Delepierre, M., Mock, M., Fouet, A., **2000**. Bacterial SLH domain proteins are non-covalently anchored to the cell surface via a conserved mechanism involving wall polysaccharide pyruvylation. EMBO Journal. 19: 4473-4484
- Mikkelsen**, N.E., Brannvall, M., Virtanen, A., Kirsebom, L.A., **1999**. Inhibition of RNase P RNA cleavage by aminoglycoside. Proc. Natl. Acad. Sci. USA. 96: 6155-6160
- Miyazaki**, K., **2002**. Random DNA fragmentation with endonuclease V: application to DNA shuffling. Nucleic Acids Res. 30: e139
- Moazed**, D., Noller, H.F., **1987**. Interaction of antibiotics with functional sites in 16 S ribosomal RNA. Nature. 327: 389-394
- Mullis**, K.B., Faloona, F.A., **1987**. Specific synthesis of DNA *in vitro* via a polymerase-catalysed chain reaction. Methods Enzymol. 155: 335-350
- Murakami**, H., Hohsaka, T., Sisido, M., **2002**. Random insertion and deletion of arbitrary number of bases for codon-based random mutation of DNAs. Nat. Biotech. 20: 76-81
- N**
- Nazina**, T.N., Tourova, T.P., Poltaraus, A.B., Novikova, E.V., Grigoryan, A.A., Ivanova, A.E., Lysenko, A.M., Petrunyaka, V.V., Osipov, G.A., Belyaev, S.S., Ivanov, M.V., **2001**. Taxonomic study of aerobic thermophilic bacilli: descriptions of *Geobacillus subterraneus* gen. nov., sp. nov. and *Geobacillus uzenensis* sp. nov. from petroleum reservoirs and transfer of *Bacillus stearothermophilus*, *Bacillus thermocatenulatus*, *Bacillus thermoleovorans*, *Bacillus kaustophilus*, *Bacillus thermoglucosidasius* and *Bacillus thermodenitrificans* to *Geobacillus* as the new combinations *G. stearothermophilus*, *G. thermocatenulatus*, *G. thermoleovorans*, *G. kaustophilus*, *G. thermoglucosidasius* and *G. thermodenitrificans*. Int. J. Syst. Evol. Microbiol. 51: 433-446
- Nelson**, R.M., Cecconi, O., Roberts, W.G., Aruffo, A., Linhardt, R.J., Bevilacqua, M.P., **1993**. Heparin oligosaccharides bind L- and P-selectin and inhibit acute inflammation. Blood. 82, 3253-3258
- Nemoto**, N., Miyamoto-Sato, E., Husimi, Y., Yanagawa, H., **1997**. *In vitro* virus: bonding of mRNA bearing puromycin at the 3'-terminal end to C-terminal end of its encoded protein on the ribosome *in vitro*. FEBS Lett. 414: 405-408
- Nierenberg**, N.W., Matthaei, J.H., **1961**. The dependence of cell-free protein synthesis in *E.coli* on naturally occurring or synthetic polyribonucleotides. Proc.Natl. Acad. Sci.USA. 47: 1588-1602
- O**
- Oliphant**, A.R., Nussbaum, A.L., Stuhl, K., **1986**. Cloning of random-sequence oligodeoxynucleotides. Gene. 44: 177-183
- Oshima**, .T., Imahori, K., **1974**. Description of *Thremus thermophilus* (Yoshida and Oshima) comb.nov., a nonspurulating thermophilic bacterium from Japanese thermal spa. Int.J.Syst.Bacteriol. 24: 102-112
- Ostermeier**, M., Nixon, A.E., Shim, J.H., Benkovic, S., **1999**. Combinatorial protein engineering by incremental truncation. Proc. Natl. Acad. Sci. USA. 96: 3562-3567
- Ostermeier**, M., Nixon, A.E., Benkovic, S., **1999**. Incremental Trunction as a strategy in the engineering of novel biocatalysts. Bioorganic&Medicinal Chem. 7: 2139-2144
- Ostermeier**, M., Shim, J.H., Benkovic, S., **1999**. A combinatorial approach to hybrid enzymes independent of DNA homology. Nat. Biotech. 17: 1205-1209

---

## VI LITERATURVERZEICHNIS

---

### P

**Parsell**, D.A., Silber, K.R., Sauer, R.T., **1990**. Carboxy-terminal determinants of intracellular protein degradation. *Genes Dev.* 4: 277-286

**Pelletier**, J.N., Campell-Valois, F.X., Michnick, S.W., **1998**. Oligomerization domain-directed reassembly of active dihydrofolate reductase from rationally designed fragments. *Proc. Natl. Acad. Sci. USA.* 95: 12141-12146

**Pesteka**, S., Marshall, R., Nirenberg, M., **1965**. RNA codewords and protein synthesis. Effects of streptomycin on the formation of ribosome-tRNA complexes. *Proc. Natl. Acad. Sci. USA.* 53: 639-646

**Peyret**, J.L., Bayan, N., Jolift, G., et al. **1993**. Characterization of the csp B gene encoding PS 2, an ordered surface layer protein in *Corynebacterium glutamicum*. *Mol. Microbiol.* 9: 397-409

**Plückthun**, A., Schaffitzel, C., Hanes, J., Jermytus, L., **2000**. *In vitro* selection and evolution of proteins. *Adv. Protein Chem.* 55: 367-403

**Pouwels**, P.H., Kolen, C.A.P.M., Boot, H.J., **1997**. S-layer protein genes of Lactobacillus: In BAHL et al. 1997. Molekular biology of S-layer. *FEMS Microbiol. Rev.* 20: 78-82

### R

**Rathore**, D., McCutchan, T.F., Garoczi, D.N., Hernáiz, M.J., LeBrun, L.A., Lang, S.C., Linhardt, R.J., **2001**. Direct measurement of the interactions of glycosaminoglycans and a heparin decasaccharide with the malaria circumsporozoite protein. 40: 11518-11524

**Ray**, B.K., Apirion, D., **1979**. Characterization of 10S RNA: a new stable RNA molecule from *E.coli*. *Mol. Gen. Genet.* 174: 25-32

**Rider**, C.C., Coombe, D.R., Harrop, H.A., Hounsell, E.F., Bauer, C., Feeney, J., Mulloy, B., Mahmood, N., Hay, A., Parish, C.R., **1994**. Anti-HIV-1 activity of chemically modified heparins: correlation between binding to the V3 loop of gp120 and inhibition of cellular HIV-1 infection in vitro. *Biochemistry.* 33: 6974-6980

**Ries**, W., Hotzy, C., Schocher, I., Sleytr, U.B., Sára, M., **1997**. Evidence that the N-terminal part from *Bacillus stearothermophilus* PV72/p2 recognizes a secondary cell wall polymer. *J. Bacteriol.* 179: 3892-3898

**Roberts**, R.W., Szostak, J.W., **1997**. RNA-peptide fusions for the *in vitro* selection of peptides and proteins. *Proc. Natl. Acad. Sci. USA.* 94: 12297-12302

**Roche**, E.D., Sauer, R.T., **1999**. SsrA-mediated peptide tagging caused by rare codons and tRNA scarcity. *EMBO J.* 18: 4579-4589

**Roger**, , Chang, A.H., von Ahsen, U., Schroeder, R., Davies, J., **1996**. Inhibition of self-cleavage reaction of the human hepatitis delta virus ribozyme by antibiotics. *J.Mol. Biol.* 259: 916-925

### S

SANGER, F., NICKLER, S., COULSEN, A.R., **1977**. DNA Sequencing with chain-terminating inhibitors. *Proc. Natl. Acad. Sci. USA.* 74: 5463-5467

**Sambrock**, J., Fritsch, E.F., Maniatis, T., **1989**. Molecular cloning. A laboratory manual. Cold Spring Harbour Laboratory Press, Cold Spring Harbor, NY

**Sára**, M., Egelseer, E.M., Dekitisch, C., Sleytr, U.B., **1998**. Identification of two binding domains, one for peptidoglycan and another for a secondary cell wall polymer, on the N-Terminal part of the S-layer protein SbsB from *Bacillus stearothermophilus* PV72/p2. *J.Bacteriol.* 180: 6780-6783

**Sára**, M., Sleytr, U.B., **2000**. S-layer proteins. *J. Bacteriol.* 182: 859-868

**Shapiro**, D.J., **1981**. Quantitative ethanol precipitation of nanogram quantities of DNA and RNA. *Anal. Biochem.* 10: 229-231

---

## VI LITERATURVERZEICHNIS

---

- Shine, J., Dalgarno, L., 1975.** Growth-dependent changes in terminal heterogeneity involving 3'-adenylate of bacterial 16S ribosomal RNA. *Nature*. 256: 232-233
- Sieber, V., Martinez, C.A., Arnold, F.H., 2001.** Libraries of hybrid proteins from distantly related sequences. *Nat. Biotech.* 19: 456-460
- Sillanpää, J., Martinez, B., Antikainen, J., Toba, T., Kallinen, N., Tankka, S., Lounatmaa, K., Keränen, J., Höök, M., Wikström, B.W., Pouwels, P.H., Korhonen, T., 2000.** Characterization of the collagen binding S-layer protein CbsA of *Lactobacillus crispatus*. *J. Bacteriol.* 182: 6440-6450
- Sleytr, U.B., 1997.** Basic and applied S-layer research: an overview. *FEMS Microbiol. Rev.* 20: 5-12
- Smith, G.P., 1985.** Filamentous fusion phage: novel expression vectors that display cloned antigens on the viron surface. *Science*. 228: 1315-1317
- Smith, W.P., Tai, P.C., Davies, B.D., 1978.** Interaction of secreted nascent chains with surrounding membrane in *Bacillus subtilis*. *Proc. Natl. Acad. Sci. USA*. 75: 5922
- Smorenburg, S.M., van Norden, C.J.F., 2001.** The complex effects of heparins on cancer progression and metastasis in experimental studies. *Pharmacol. Rev.* 53:93-105
- Spickler, C., Brunelle, M.N., Brakier-Gingras, L., 1997.** Streptomycin binds to the decoding center of 16s ribosomal RNA. *J. Mol. Biol.* 273: 586-599
- Spillmann, D., Witt, D., Lindahl, U., 1998.** Defining the interleukin-8-binding domain of heparan sulfate. *J.Biol.Chem.* 273: 15487-15493
- Stage, T.K., Hertel, K.J., Uhlenbeck, O.C., 1995.** Inhibition of the hammerhead ribozyme by neomycin. *RNA*. 1: 95-101
- Stemmer, W.P.C., 1994 a).** Rapid evolution of a protein *in vitro* by DNA shuffling. *Natur (London)* 370: 389-391
- Stemmer, W.P.C., 1994 b).** DNA shuffling by random fragmentation and reassembly: *In vitro* recombination for molecular evolution. *Proc. Natl. Acad. Sci. USA*. 91: 10747-10751
- Stiege, W., Erdmann, V.A., 1995.** The potential of the *in vitro* protein biosynthesis system. *J. Biotech.* 41: 81-90
- Sumper, M., Berg, E., Mengelé, R., et al., 1990. Primary structure and glycosylation of the S-layer protein of *Haloflexax volcanii*. *J. Bacteriol.* 172: 7111-7118
- Stryer, L., 1996.** Biochemie. Spektrum, Akad. Verlag
- T**
- Talke, A., 2001.** Surface-layer Proteine von *Eubacterium acidaminophilum*. Diplom, MLU-Halle
- Tuerk, C., Gold, L., 1990.** Systematic evolution of ligands by exponential enrichment: RNA ligands to bacteriophage T4 DNA polymerase. *Science* 249: 505-510
- Tsuji, T., Onimaru, M., Yanagawa, H., 2001.** Random multi-recombinant PCR for the construction of combinatorial protein libraries. *Nucleic Acid Res.* 29:
- V**
- Von Ahsen, U., Davies, J., Schroeder, R., 1991.** Antibiotic inhibition of group I ribozyme function. *Nature*. 353: 368-370
- Von Ahsen, U., Schroeder, R., 1991.** Streptomycin inhibits splicing of group I introns by competition with guanosine substrate. *Nucleic Acid Res.* 19: 2261-2265

---

## VI LITERATURVERZEICHNIS

---

### **W**

**Walker**, S.G., Karunaratne, D.N., Ravenscroft, N., *et al.*, **1994**. Charakterization of mutants of *Caulobacter crescentus* defective in surface attachment of the paracrystalline surface layer. J. Bacteriol. 176: 6312-6323

**Weber**, K., Osborn, M., **1969**. The reliability of the molecular weight determinations by dodecylsulfate-polyacrylamid gel electrophoresis. J. Biol. Chem. 244: 4406-4412

**Wilson**, D.N., Nierhaus, K.H., **2003**. Das Ribosom unter der Lupe. Angew. Chem. 115: 3586-3610

**Winter**, G., Griffith, A.D., Hawinks, R.E., Hoogenboom, H.R., **1994**. Making antibodies by phage display technology. Ann.Rev. Immunol. 12: 433-455

### **Z**

**Zhang**, J., Nakayama, J., Ohyama, C., Suzuki, M., Suzuki, A., Fukuda, M., Fukuda, M.N., **2002**. Sialyl Lewis X-dependent lung colonization of B16 Melanoma cells through a selectin-like endothelial receptor distinct from E- or P-selectin. Cancer Res. 62: 4194-4198

**Zhao**, H., Arnold, F.H., **1997**. Optimization of DNA shuffling for high fidelity recombination. Nucleic Acid Res. 25: 1307-1308

**Zhao**, H., Giver, L., Shao, Z., Affholter, J.A., Arnold, F.H., **1998**. Molecular evolution by staggered extension process (StEP) in vitro recombination. Nat. Biotech. 16: 258-261

**Zindel**, U., Freudenberg, W., Rieth, M., Andreesen, J.R., Schnell, J., Widdel, F., **1988**. *Eubacterium acidaminophilum* sp. nov., a versatile amino acid-degrading anaerobe producing or utilizing H<sub>2</sub> or formate. Arch. Microbiol. 150: 254-26

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