

CURRICULUM VITAE

Michael J. Benedik

Vice Provost

Regents Professor of Biology

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EDUCATION:

University of Chicago - B.A. with Honors, 1976, Biology

Stanford University - Ph.D., 1982, Biology - Molecular Genetics

PROFESSIONAL APPOINTMENTS:

Vice Provost (7/2015-present)

Dean of Faculties and Associate Provost (1/13-6/15)

Interim Dean of Faculties and Associate Provost (7/12-1/13)

Faculty Ombuds Officer, Texas A&M University (2010-2013)

Graduate Chair, Department of Biology, Texas A&M (2006-2010)

Vice-chair, Faculty of Genetics, Texas A&M (2004-07)

Professor, Department of Biology and Faculty of Genetics, Texas A&M (2004-present)

Professor of Biology and Biochemistry (University of Houston) (2002-04)

Vice-Chair, Department of Biology and Biochemistry (University of Houston) (1994-99; 2000-03)

Director, Institute for Molecular Biology (University of Houston) (2001-03)

Visiting Scientist (sabbatical) NIH-NICHD, 1993-94

Associate Director, Institute for Molecular Biology (University of Houston) (1990-2001)

Associate Professor of Biochemical and Biophysical Sciences (University of Houston) (1991-2002)

Assistant Professor of Biochemical and Biophysical Sciences (University of Houston) (1989-91)

Assistant Professor of Biology, Texas A&M University (1985-89)

Associate Director, Laboratory for Cloning and Gene Transfer

Department of Medical Biochemistry and Genetics

Texas A&M College of Medicine (1984-85)

Staff Scientist, DNAX Research Institute of Molecular & Cellular Biology,
(1982-1984) Palo Alto, CA

HONORS:

Regents Professor, Texas A&M University, 2012
SEC Academic Leadership Development Fellow 2012-13
American Society for Microbiology – International Professor for Africa, 2010
First scholar selected for the Great Program, Capitol Normal University, Beijing China, 2009

PROFESSIONAL SERVICE ACTIVITIES:

Regional Vice-President – Texas Branch AAUP (2012-2014)
Editorial Board, Bioengineered Bugs (now Bioengineered) (2010-present)
Editorial Board, Journal of Microbial and Biochemical Technology (2010-2014)
Editorial Board, Open Biotechnology (2007-2010)
Editor, Research Advances in Microbiology (2000-2004)
Associate Editor, GENE (1994-96)
Steering Committee - Lost Pines Molecular Biology Conference (1986-2007)

UNIVERSITY SERVICE:

Council on Climate and Diversity, 2012-2015
Co-Chair, Search Advisory Committee for Faculty Ombuds Officer 2013
Speaker of the Faculty Senate, 2011-2012
Special Situations Team, 2012-2015
Student Affairs Advisory Panel 2012-2015
Student Success Center Advisory Committee 2012
Search Committee for Dean of Texas A&M University Libraries 2010-12
Athletics Council Advisory Committee 2011-12
Texas A&M University Press Site Visit Review Team 2011
Interdisciplinary Faculty Groups Ad-hoc Committee 2011-12
Task Force on Export Control, 2010-11
Honorary Degrees Committee 2010-2012 (Chair)
Task Force on Scientific Misconduct, 2010
Research Standards Officer, 2009-10
Search Advisory Committee – Associate Vice President for Graduate Studies 2009-10
Task Force for Faculty Performance Evaluations 2009-10
Steering Committee, Institutional Research Information System, 2008-09
Chair, Microbiology Search Committee (Dept of Biology), 2008-09, 2009-10
Graduate Advisor, Dept of Biology, 2006-2010
Texas A&M Faculty Senate, Executive Committee, 2009-2012
Texas A&M Faculty Senate, 2005-2012
Faculty Senate Subcommittee on Research 2005-2012
Committee on Academic Freedom, Responsibility and Tenure, 2008-2010
Chair, University Grievance Committee, 2005-2010

University Academic Appeals Panel, 2008-2010
Vice-Program Chair, Faculty of Genetics, 2005-2007
Honors Program Advisory Committee, 2004-08
Chair, Membership Committee, Faculty of Genetics, 2005-2008

GRADUATE AND POSTGRADUATE RESEARCH SUPERVISION:

Masters:

Dwight Hines, M.S. 1986
Steve Weinman, M.S. 1988
Yi-Chi Chen, M.S. 1991
Xuyang Li, M.S. 1993
Mary Godfrey, M.S. 1993
Baby Djojonegoro, M.S. 1995
Wenping Dai, M.S. 1997
Karen Yoas, M.S. 1997
Lan Wang, M.S. 2008
Tysheena Perkins, M.S. 2008
Lacy Basile, M.S. 2008
Liz Neyland M.S. 2010 (co-chair)
Leah Towers M.S. 2010 (co-chair)
Xiaomeng Huang M.S. 2010

Doctoral:

Tim Ball, Ph.D. 1990
Yousin Suh, Ph.D. 1994
Shida Jin, Ph.D. 1994
Robert Riddle, Ph.D. 2000
Mehmet Berkmen, Ph.D. University of Vienna, 2000. Co-supervisor.
Dakshina Jandhyala, Ph.D. 2002
Rodrigo Mella, Ph.D. 2010 (co-chair w James Golden)
Krithika Kumar (co-chair w James Golden) Ph.D. 2011
Mary Abou-Nader, Ph.D. 2012
Jason Parks, Ph.D. 2014

Postdoctoral Associates:

Peter Saurugger (1985-87)
Sharon Braunagel (1987-1989)
Greg Shipley (1989-1991)
Ulrich Strych (1996-2004)
Weili Dai (1999-01)
Khatri Latha (2001-2002)
Peter Mooney (2003-2004)

Visiting Scientist:

Dr. Maria Filimonova, Kazan State University, Russia (1992)

Dr. Daechul Cho, Soonchunhyang University, Korea (2007-08)
Dr. Matthew Ilori, University of Lagos, Nigeria (2007-08)

FORMAL TEACHING (recent):

MICR 351 Introductory Microbiology
MICR 360 Microbial Biotechnology
MICR/GENE 406 Bacterial Genetics
BIOL 285 Seminar on Origins of People, Cultures and Languages
BIOL 285 Seminar on Politics and People: Influences on Science
UPAS 181 Sex and the Evolution of Human Behavior
BIOL 681 Graduate Student Orientation Seminar
BIOL 689/609 Molecular Tools in Biology

RESEARCH GRANTS AWARDED (>\$6,000,000):

- 1) NIH-Biomedical Research Support Grant 1986, \$6000
- 2) NIH-Biomedical Research Support Grant 1987, \$5000
- 3) NIH-Biomedical Research Support Grant 1988, \$6000
- 4) Genetic Engineering of Plants for Disease Resistance
Texas A&M Research Enhancement Award, \$110,000, 1987-89
Co-PI's: Dr. Tom McKnight and Dr. Larry Griffing (TAMU-BIOL)
- 5) Extracellular Export of Cloned Gene Products
NIH GM36891-01A1 \$345,000 7/1/87-6/30/91
- 6) Purchases of Equipment for Molecular Biology Common Equipment Use Facility
NSF BBS-8703784 \$242,419 7/1/87-6/30/90
Co-PIs: Dr. Susan Golden, Dr. James Golden, Dr. Lawrence Griffing, and Dr. Karen Van Winkle-Swift (TAMU- BIOL)
- 7) Extracellular Protein Secretion from Bacteria
Texas Advanced Research Program \$128,000 11/1/89-10/31/92
- 8) NIH-BRSG Small Equipment Grant 1990 \$22,000
- 9) Instrumentation for New Biochemistry Building
National Science Foundation DIR-9109294 \$201,000)
8/1/91-7/31/94 Co-PIs: Dr. Shiao-Chun Tu (BCHS)
- 10) Structural Biochemistry of Important Microbial Extracellular Enzymes
Texas Advanced Research Program #3652-233 \$178,839 9/91-8/94
- 11) Presidential Research Enhancement Award, 1992
Biological Clocks in Bacteria \$7398
- 12) Tailoring of Protein A Specificity by Genetic Engineering
and In Vivo Selection. (Co-PI: R. Willson) National Science Foundation BCS-9207872
\$280,903 9/01/92-8/31/96
- 13) De-nitrification of Fossil Fuels by Microbial Processes.
(Co-PI: R. Willson) Energy Biosystems Corporation \$120,000 11/93-6/99
- 14) Retrotransposons in the Fission Yeast *Schizosaccharomyces pombe*
N.I.H., \$50,000, 7/93-6/94 (sabbatical salary award)

- 15) Microbial desulfurization of fossil fuels, a high temperatures approach.
UH Energy Lab, \$5500, 1994-95.
- 16) Biological Denitrification of Fossil Fuels: Genetic and Process Engineering. Texas Advanced Technology Program #3652272,
\$108,000, 12/93-11/95, (Co-PI: R. Willson)
- 17) Developing Expression and Secretion Systems for Enzymes Important in Bioremediation of Seafood Waste.
UH Coastal Center, \$4800, 1995-96.
- 18) Isolation of Stable Enzyme Variants from Phage Display Libraries.
Texas Advanced Research Program #3652-982. \$159,746 1/96-12/97
(Co-PI: R. Willson)
- 19) A Combinatorial Chemistry Approach to Rational Enzyme Design.
Welch Foundation. \$126,000 1996-99.
- 20) System for Detection of chromosomal translocation.
UH Peer Grant, \$5000
- 21) Biological Denitrification of Fossil Fuels: Genetic and Process Engineering.
Texas Advanced Technology Program #3652272,
\$180,000, 12/97-12/99, (Co-PI: R. Willson)
- 22) The Role of Genetic Exchange in Evolution
Coast Center: \$16,900 (Co-PI: Lisa Meffert) (1998-99)
- 23) Regulation of Bacterial Denitrogenation Genes (1998-99)
UH Energy Lab: \$5600
- 24) The Role of Genetic Exchange in Evolution
Houston Coast Center: \$15,000 (Co-PI: Lisa Meffert) (1999-00)
- 25) Genetic Engineering for Enzymatic Cyanide Remediation (1999-00)
Environmental Institute of Houston \$11,600
- 26) Molecular Machinery for Protein Import.
Welch Foundation. \$135,000 (1999-00)
- 27) Genetic Engineering for Enzymatic Cyanide Remediation (2000-01)
Environmental Institute of Houston \$15,600
- 28) Genetic Engineering for Enzymatic Cyanide Remediation (2001-02)
Environmental Institute of Houston \$14,000
- 29) Drug Design for Treating Opportunistic Infections in AIDS
N.I.H 12/99-11/04 \$2,843,284 total (co-PI's K. Krause and J. Briggs)
(Direct costs \$108,000 per year to MB)
- 30) Genetic Engineering of Enzymatic Cyanide Clearance
Gulf Coast Hazardous Substance Research Center
6/00-5/04 \$134,000 (Co-PI: Richard Willson)
- 31) The role of quaternary structure in catalysis: a cyanidase model.
Welch Foundation. \$135,000 (2002-05)
- 32) Dielectric Spectroscopy for the Detection of Biological & Chemical Warfare Agents.
Naval Surface Warfare Center,
John H. Miller, Jr. (PI); M. Benedik, J. Wosik, I. Kakadiaris, R. Wilson (Co-Is). \$198,525.
Feasibility study is to investigate using dielectric spectroscopy technologies for the
detection of biological and chemical warfare agents. (04/03-04/04)
- 33) Substrate recognition among oligomeric nitrilases.

- Robert A. Welch Foundation. \$150,000 (2005-2008)
- 34) Cyanide Remediation: Enzyme Modification and Immobilization.
Texas Hazardous Waste Research Center. \$27,000 (9/2008-8/2009)
- 35) Cyanide Remediation: Enzyme Modification and Immobilization.
Texas Hazardous Waste Research Center. \$28,000, (9/2010-8/2011)
- 36) Engineering Improved Microbial Nitrilases
Robert A. Welch Foundation \$150,000 (2008-11)
- 37) Cyanide Remediation: Evolving Improved Enzymes. Texas Hazardous Waste Research Center. \$25,000 (9/2012-8/2013)
- 38) Cyanide Remediation: Evolving Improved Enzymes. Texas Hazardous Waste Research Center. \$40,000 (9/2013-8/2015)

PUBLICATIONS (>90):

- 1) Abou-Nader Crum, M, JM Park, BT Sewell, MJ Benedik. (2015) C-terminal hybrid mutant of *Bacillus pumilus* cyanide dihydratase dramatically enhances thermal stability and pH tolerance by reinforcing oligomerization. *J Appl Microbiol*. 2015 Jan 19. doi: 10.1111/jam.12754. [Epub ahead of print].
- 2) Islam, S, MJ Benedik, TK Wood. (2015) Orphan toxin OrtT (YdcX) of *Escherichia coli* reduces growth during the stringent response. *Toxins (Basel)* 7:299-321. doi: 10.3390/toxins7020299.
- 3) Abou-Nader Crum, M, JM Park, AE Mulelu, BT Sewell, MJ Benedik. (2015) Probing C-terminal interactions of the *Pseudomonas stutzeri* cyanide-degrading CynD protein. *Applied Microbiology and Biotechnology* [Epub ahead of print].
- 4) Kwan BW, DM Lord, W Peti, R Page, MJ Benedik, TK Wood. (2014) The MqsR/MqsA Toxin/Antitoxin System Protects *Escherichia coli* During Bile Acid Stress. *Environ Microbiol*. 2014 Dec 23. doi: 10.1111/1462-2920.12749. [Epub ahead of print].
- 5) Kwan BW, DO Osbourne, Y Hu, MJ Benedik, TK Wood. (2014) Phosphodiesterase DosP increases persistence by reducing cAMP which reduces the signal indole. *Biotechnol Bioeng*. doi: 10.1002/bit.25456. [Epub ahead of print].
- 6) Hu Y, BW Kwan, DO Osbourne, MJ Benedik and TK Wood. (2014) Toxin YafQ increases persister cell formation by reducing indole signaling. *Environ Microbiol*. 2014 Jul 15. doi: 10.1111/1462-2920.12567. [Epub ahead of print]
- 7) Vilo C, MJ Benedik, M Ilori, Q Dong. (2014) Draft genome sequence of *Cupriavidus* sp. strain SK-3, a 4-chlorobiphenyl- and 4-chlorobenzoic acid-degrading bacterium. *Genome Announc*. 2014 Jul 3;2(4). pii: e00664-14. doi: 10.1128/genomeA.00664-14.
- 8) Vilo C, MJ Benedik, M Ilori, Q Dong. (2014) Draft genome sequence of *Cupriavidus* sp. strain SK-4, a di-ortho-substituted biphenyl-utilizing bacterium isolated from polychlorinated biphenyl-contaminated sludge. *Genome Announc*. 2014 May 22;2(3). pii: e00474-14. doi: 10.1128/genomeA.00474-14.
- 9) Guo Y, C Quiroga, Q. Chen, MJ McAnulty, MJ Benedik, TK Wood, and X Wang. (2014) RalR (a DNase) and RalA (a small RNA) form a type I toxin-antitoxin system in *Escherichia coli*. *Nucl Acids Res*. 42:6448-62.
- 10) Cheng HY, VWC Soo, S Islam, MJ McAnulty, MJ Benedik, and TK Wood. (2013) Toxin GhoT of the GhoT/GhoS TA system damages the cell membrane to reduce ATP and to reduce growth under stress. *Environ Microbio*. 16:1741-54.
- 11) Martinez, AK, E Gordon, A Sengupta, NH Shirole, D Klepacki, B Martinez-Garriga, L Brown, MJ

- Benedik, C Yanofsky, A Mankin, N Vázquez-Laslop, MS Sachs, and LR Cruz-Vera (2013) Interactions of the TnaC nascent peptide with rRNA in the exit tunnel enable the ribosome to respond to free tryptophan. *Nucleic Acids Res.* 42:1245-56.
- 12) Ilori, M., F Picardal, R Aramayo, SA Adebuseye, OS Obayori, and MJ Benedik. (2013) Catabolic plasmid specifying polychlorinated biphenyl degradation in *Cupriavidus* sp. strain SK-4: mobilization and expression in a pseudomonad. *J. Basic Microbiol.* doi: 10.1002/jobm.201200807.
 - 13) Kwan, BW, JA Valenta, MJ Benedik, and TK Wood. (2013) Arrested protein synthesis increases persister-like cell formation. *Antimicrob. Agents Chemother.* 57:1468-73.
 - 14) Wang X, DM Lord, SH Hong, W Peti, MJ Benedik, R Page, and TK Wood. (2013) Type II toxin/antitoxin MqsR/MqsA controls type V toxin/antitoxin GhoT/GhoS. *Environ Microbiol.* 15:1734-44.
 - 15) Vilo, CA, MJ Benedik, DA Kunz, Q Dong (2012) Draft genome sequence of the cyanide-utilizing bacterium *Pseudomonas fluorescens* strain NCIMB 11764. *J. Bacteriol.* 194:6618-19.
 - 16) Wang, X, DM Lord, H-Y Cheng, DO Osbourne, SH Hong, V Sanchez-Torres, C Quiroga, K Zheng, T Herrmann, W Peti, MJ Benedik, R Page, and TK Wood (2012) A new type V toxin-antitoxin system where mRNA for toxin GhoT is cleaved by antitoxin GhoS. *Nature Chemical Biology* 8:855-61.
 - 17) Hong, SH, X Wang, HF O'Connor, MJ Benedik and TK Wood (2012) Bacterial persistence increases as environmental fitness decreases. *Microbial Biotechnology* 5:509-22.
 - 18) Martinez, AK, NH Shirole, S Murakami, MJ Benedik, MS Sachs, LR Cruz-Vera. (2012) Crucial elements that maintain the interactions between the regulatory TnaC peptide and the ribosome exit tunnel responsible for Trp inhibition of ribosome function. *Nucleic Acids Res.* 40:2247-57.
 - 19) Hu, Y, MJ Benedik and TK Wood. (2012) Antitoxin DinJ influences the general stress response through transcript stabilizer CspE. *Environ. Microbio* 14:669-79.
 - 20) Wang L, JM Watermeyer, AE Mulelu, BT Sewell, and MJ Benedik (2012) Engineering pH tolerant mutants of a cyanide dihydratase. *Applied Microbiology and Biotechnology* 94:131-140.
 - 21) Wang, X, Y Kim, SH Hong, Q Ma, BL Brown, M Pu, AM Tarone MJ. Benedik, W Peti, R Page, and TK Wood. (2011) Antitoxin MqsA helps mediate the bacterial general stress response. *Nature Chemical Biology* 7:359-366.
 - 22) Abou-Nader, M and MJ Benedik. (2010) Rapid generation of random mutant libraries. *Bioengineered Bugs* 1:337-340.
 - 23) Dvoracek, C.M., G. Sukhonosova, M.J. Benedik, and J.C. Grunlan. (2009) Antimicrobial behavior of polyelectrolyte-surfactant thin film assemblies. *Langmuir* 25:10322-8
 - 24) Ju J, Qi J, Xu S, Ohnishi K, Benedik MJ, Xue Y, Ma Y. (2009) Crystallization and preliminary X-ray study of alkaline alanine racemase from *Bacillus pseudofirmus* OF4. *Acta Crystallogr Sect F Struct Biol Cryst Commun.* 65:166-8.
 - 25) Thuku, R.N., D. Brady, M.J. Benedik, B.T. Sewell (2009) Microbial nitrilases: versatile, spiral forming, industrial enzymes. *Journal of Applied Microbiology* 106:703-727.
 - 26) Dent, K.C., B.W. Weber, M.J. Benedik, B.T. Sewell. (2008) The cyanide hydratase from *Neurospora crassa* forms a helix which has a dimeric repeat. *Applied Microbiology and Biotechnology* 82:271-278.
 - 27) Basile, L.J., R.C. Willson, B.T. Sewell and M.J. Benedik (2008) Genome mining of cyanide degrading nitrilases from filamentous fungi. *Applied Microbiology and Biotechnology* 80:427-435.
 - 28) Woodward J.D., B.W. Weber, M.P. Scheffer, M.J. Benedik, A. Hoenger, B.T. Sewell. (2008) Helical structure of unidirectionally shadowed metal replicas of cyanide hydratase from *Gloeocercospora sorghi*. *J Struct Biol.* 161:111-119.

- 29) Strych U., M. Davlieva, J.P. Longtin, E.L. Murphy, H. Im, M.J. Benedik, K.L. Krause. (2007) Purification and preliminary crystallization of alanine racemase from *Streptococcus pneumoniae*. *BMC Microbiol.* 7(1):40
- 30) Nawarathna D., J.R. Claycomb, J.H. Miller, M.J. Benedik. (2005). Nonlinear dielectric spectroscopy of live cells using superconducting quantum interference devices. *App Phys Lett* 86: 023902
- 31) Sewell, B.T., R.N. Thuku, X. Zhang, and M. J. Benedik. (2005). Oligomeric structure of nitrilases, effect of mutating interfacial residues on activity. *Ann. N.Y. Acad Sci.* 1056:153-159.
- 32) Jandhyala, D. M., R.C. Willson B. T. Sewell and M.J. Benedik. (2005) Comparison of cyanide-degrading nitrilases. *Applied Microbiology and Biotechnology.* 68:327-335.
- 33) LeMagueres P., H. Im, J. Ebalunode, U. Strych, M. Benedik, J. Briggs, H. Kohn, and K.L. Krause. (2005) The 1.9 Å crystal structure of alanine racemase from *Mycobacterium tuberculosis* contains a conserved entryway into the active site. *Biochemistry* 44:1471-1481.
- 34) Prodan C., F. Mayo, J.R. Claycomb, J.H. Miller, M.J. Benedik (2004). Low-frequency, low-field dielectric spectroscopy of living cell suspensions. *J Appl Phys* 95:3754-3756.
- 35) Gibbs, P.R., Riddle, R., L. Marchal, M.J. Benedik and R.C. Willson (2003) Purification and characterization of 2'aminobiphenyl-2,3-Diol 1,2-dioxygenase from *Pseudomonas* sp. LD2. *Protein Expression and Purification* 32:35-43.
- 36) Sewell, B.T., M.N. Berman, P.M. Meyers, D. Jandhyala, and M.J. Benedik. (2003) The Cyanide Degrading Nitrilase from *Pseudomonas stutzeri* AK61 is a Twofold Symmetric, 14-Subunit Spiral. *Structure* 11:1413-22.
- 37) LeMagueres P, Im H, Dvorak A, Strych U, Benedik M, Krause KL. (2003) Crystal structure at 1.45 Å resolution of alanine racemase from a pathogenic bacterium, *Pseudomonas aeruginosa*, contains both internal and external aldimine forms. *Biochemistry.* 42:14752-14761.
- 38) Kim, M.G., Strych, U., Krause, K., Benedik, M., and Kohn, H. (2003) Evaluation of amino-substituted heterocyclic derivatives as alanine racemase inhibitors. *Medicinal Chemistry Research* 12:130-138.
- 39) Jandhyala, D., M. Berman, P. Meyers, T. Sewell, R.C. Willson and M.J. Benedik. (2003) CynD, the cyanide dihydratase from *Bacillus pumilus*: Gene cloning and structural studies. *Applied Envir. Microbiol.* 69:4794-4805.
- 40) Samartzidou, H, Mehrazin, M., Xu, Z., Benedik, M. J. and A.H. Delcour. (2003) Cadaverine Inhibition of Porin Plays a Role in Cell Survival at Acidic pH. *Journal of Bacteriology.* 185:13-19.
- 41) Kim, M.G. U. Strych, K. Krause, M. Benedik, and H. Kohn. (2003) *N*(2)-Substituted D,L-Cycloserine Derivatives: Synthesis and Evaluation as Alanine Racemase Inhibitors. *The Journal of Antibiotics (Toyko)* 56:160-168.
- 42) Riddle, R., P.R. Gibbs, R.C. Willson and M.J. Benedik (2003). Purification and Properties of 2-hydroxy-6-oxo-6-(2'-aminophenyl)hexa-2,4-dienoic acid Hydrolase Involved with Microbial Degradation of Carbazole. *Protein Expression and Purification.* 28:182-189.
- 43) Riddle, R., P.R. Gibbs, R.C. Willson and M.J. Benedik (2003) Recombinant carbazole-degrading strains for enhanced petroleum processing. *Journal of Industrial Microbiology and Biotechnology.* 30:6-12.
- 44) Strych, U. and M.J. Benedik. (2002) Mutant analysis shows that alanine racemases from *Pseudomonas aeruginosa* and *Escherichia coli* are dimeric. *J. Bacteriol.* 184:4321-25.
- 45) Marty, K.B., C. Williams, L.J. Guynn, M.J. Benedik and S.R. Blanke. (2002) Characterization of a cytotoxic factor in the culture filtrates of *Serratia marcescens*. *Infection and Immunity* 70:1121-1128.
- 46) Berkmen, M. and M. J. Benedik (2002) Multi-copy repression of *Serratia marcescens* nuclease expression by *dinI*. *Current Microbiology* 44: 44-48.

- 47) M. N. Filimonova, V. P. Gubskaya, I. A. Nuretdinov, M. J. Benedik, N. A. Cherepanova, and I. B. Leshchinskaya. 2001. Study of the Mechanism of Action of *p*-Chloromercuribenzoate on Endonuclease from the Bacterium *Serratia marcescens*. *Biochemistry (Moscow)* 66:323-327.
- 48) Strych, U., R. Penland, M. Jimenez, K. Krause, and M. Benedik. 2001. Characterization of the Alanine Racemases from two Mycobacteria. *FEMS Microbiology Letters* 196:93-98.
- 49) Strych, U., H. Huang, K. Krause, and M. Benedik. 2000. Characterization of the Alanine Racemases from *Pseudomonas aeruginosa* PAO1. *Current Microbiology* 41:290-294
- 50) Balasundaram, D., M.J. Benedik, M. Morphew, V.D. Dang and H.L. Levin. 1999. Nup124p Is a Nuclear Pore Factor of *Schizosaccharomyces pombe* That Is Important for Nuclear Import and Activity of Retrotransposon *Tf1*. *Molecular and Cellular Biology* 19:5768-5784.
- 51) Riddle, R.R., R.C. Willson, and M.J. Benedik. 1999. Temperature- And Solvent-Tolerant Mutants Of Filamentous Bacteriophage Helper M13 KO7. *Biotechnology Letters*. 21:87-90.
- 52) Dang, V. D., M.J. Benedik, K. Ekwall, J. Choi, R. C. Allshire, and H. L. Levin. 1999. A New Member of the Sin3 Family of Corepressors is Essential for Cell Viability and Required for Retroelement Propagation in Fission Yeast. *Molecular and Cellular Biology* 19:2351-2365.
- 53) Strych, U., W. Dai, and M.J. Benedik. 1999. The NucE and NucD Lysis Proteins Are Not Essential for Secretion of the *Serratia marcescens* Extracellular Nuclease. *Microbiology* 145:1209-1216.
- 54) Benedik, M.J., P.R. Gibbs, R.R. Riddle and R.C. Willson. 1998. Microbial denitrogenation of fossil fuels. *Trends in Biotechnology* 16:390-395.
- 55) Filimonova, M.N., Benedik, M.J., Urazov, N., and Leshchinskaya, I.B. 1998. *Serratia marcescens* nucleases are polydispersive at pH optimum. *Appl. Biochem. Microbiol. (Moscow)*. 35: 20-24.
- 56) Guynn, L.J. W.P. Dai and M.J. Benedik. 1998. Nuclease Overexpression Mutants of *Serratia marcescens*. *J. Bacteriol.* 180:2262-2264.
- 57) Benedik, M.J. and U. Strych. 1998. *Serratia marcescens* and its extracellular nuclease. *FEMS Microbiol. Letters*. 165:1-13.
- 58) Filimonova, M.N., Gubskaya, V.P., Nuretdinov, I.A., Benedik, M.J., Bogomolnaya, L.M., Andreeva, M.A., Leshchinskaya, I.B. 1997. Isoforms of *Serratia marcescens* nuclease. The role of Mg⁺⁺ ions in mechanism of hydrolysis. *Biokhimiia (Moscow)* 62:1148-1154.
- 59) Berkmen, M., M.J. Benedik and U. Bläsi. 1997. The *Serratia marcescens* NucE protein functions as a holin in *Escherichia coli*. *J. Bacteriol.* 179:6522-6524
- 60) Suh, Y. S. and M.J. Benedik. 1997. Secretion of nuclease across the outer membrane of *Serratia marcescens* and its energy requirements. *J. Bacteriol.* 179:677-683.
- 61) Liu, N.Z., M.J. Benedik, and A.H. Delcour. 1997. Disruption of polyamine modulation by a single amino acid substitution on the L3 loop of the OmpC porin channel. *Biochim. Biophys. Acta* 1326:201-212.
- 62) Suh, Y.S., Jin, S., Ball, T.K. and Benedik, M.J. 1996. Two-step secretion of the *Serratia marcescens* extracellular nuclease. *J. Bacteriol.* 178:3771-3778.
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