

## CURRICULUM VITAE :

April 2009

**Linda L. Jahnke:** Exobiology Branch, NASA-Ames Research Center  
email: Linda.L.Jahnke@nasa.gov  
phone: 650-604-3221

### **Education:**

B.A. (Major Bacteriology, Minor Chemistry) University of California, Berkeley, 1965.  
One year graduate study in Bacteriology Dept. as Research Fellow with Dr. Michael Doudoroff, University of California Berkeley, 1966.

### **Professional Experience:**

Microbiologist for NASA-Ames Research Center. Research assistant in laboratory of Dr. Harold Klein studying membrane and lipid synthesis in yeast, 1966-1981.

Research Scientist for NASA-Ames Research Center. Funded principal investigator in exobiology program. Research focus on lipid synthesis and function; microbial biomarkers as molecular fossils and the role of oxygen to the evolution of early ecosystems, 1981 to present.

Chairperson Ames Radiation Safety Committee, 1996-2005

Host Scientist, Jason Foundation, Mysteries of Earth and Mars, 2004-2006

### **Professional Societies**

American Society for Microbiology

International Society for the Study of the Origin of Life

American Geophysical Union

Geochemical Society

### **Honors and Awards:**

NASA Exceptional Scientific Achievement Medal, 2001

Space Sciences Division Performance Award, 1997

NASA Tech Brief Award, 1993.

Ames Director's Discretionary Fund Recipient, 1991-1993.

Graduate Research Fellowship, University of California, Berkeley, 1965-1966

Member, Alpha Gamma Epsilon, Berkeley Honor Society

Alumni Scholarship, University of California, 1963-1965

## PUBLICATIONS

1. Parenteau, M. N., **Jahnke, L. L.**, Embaye, T. & Cady, S. L. (Submitted) Lipid biomarkers in iron-mineralized phototrophic mats at Chocolate Pots hot springs, Yellowstone National Park, USA.
2. Switzer Blum, J., Han, S., Lanoil, B., Saltikov, C. Witte, B., Tabita, F. R., Langley, S., Beveridge, T. J., **Jahnke, L.**, R. S. Oremland (2009) Ecophysiology of "*Halarsenatibacter silvermanii*" strain SLAS-1<sup>T</sup>, gen. nov., sp. nov., a facultative chemoautotrophic arsenate respirer from salt-saturated Seales Lake, California. *Applied and Environmental Microbiology* 75(7): 1950-1960.

3. **Jahnke, L.L.**, Orphan, V. J., Embaye, T., Turk, K. A., Kubo, M., Summons, R. E. & Des Marais, D.J. (2008) Lipid biomarker and phylogenetic analyses to reveal archaeal biodiversity and distribution in hypersaline microbial mat and underlying sediment. *Geobiology* 6: 394-410.
4. Orphan, V.J., **Jahnke, L. L.**, Embaye, T., Turk, K.A., Pernthaler, A., & D. J. DesMarais (2008) Characterization and spatial distribution of methanogens and methanogenic biosignatures in hypersaline microbial mats. *Geobiology* 6: 376-393.
5. Green, S. J., Blackford, C., Bucki, P., **Jahnke, L. L.**, & Prufert-Bebout, L. (2008) A salinity and sulfate manipulation of hypersaline microbial mats reveals stasis in the cyanobacterial community structure. *The ISME Journal*, 2: 457-470.
6. Talbot, H. M., Summons, R. E., **Jahnke, L. L.**, Cockell, C. S., Rohmer, M. & Farrimond, P. (2008) Cyanobacterial bacteriohopanepolyol signatures from cultures and natural environmental settings. *Organic Geochemistry* 39: 232-263.
7. Summons, R.E., Bradley, A.S., **Jahnke, L.L.** & J.R. Waldbauer (2006) Steroids, triterpenoids and molecular oxygen. *Philosophical Transactions of the Royal Society* 361:951-968.
8. Goffredi, S.K., Orphan, V.J., Rouse, G.W., **Jahnke, L.**, Embaye, T., Turk, K., Lee, R. & Vrijenhoek, C. (2005) Evolutionary innovation: a bone-eating marine symbiosis. *Environmental Microbiology* 6:1369-1378.
9. Love, G. D., Bowden, S. A., **Jahnke, L. L.**, Snape, C. E., Campbell, C. N., Day, J. C. & Summons, R. E. (2005) A catalytic hydrolysis method for the rapid screening of microbial cultures for lipid biomarkers. *Organic Geochemistry* 36:63-82
10. **Jahnke, L.L.**, Embaye, T., Hope, J., Turk, K. A., van Zuilen, M., Des Marais, D. J., Farmer, J. D., and Summons, R. E. 2004. Lipid Biomarker and Carbon Isotopic Signatures for Stromatolite-Forming, Microbial Mat Communities and *Phormidium* cultures from Yellowstone National Park. *Geobiology* 2:31-47.
11. Londry, K. L., **Jahnke, L. L.** and Des Marais, D. J. 2004. Stable carbon isotope ratios of lipid biomarkers of sulfate-reducing bacteria. *Applied and Environmental Microbiology* 70:745-751.
12. Talbot, H. M., Summons, R., **Jahnke, L.**, and Farrimond, P. 2003. Characteristic fragmentation of bacteriohopanepolyols during atmospheric pressure chemical ionisation liquid chromatography/ion trap mass spectrometry. *Rapid Communications in Mass Spectrometry* 17:2788-2796.
13. Trent, J. D., Kagawa, H., Paavola, C., McMillan, A., Howard, J., **Jahnke, L.**, Lavin, C., Embaye, T. and Henze, C. E. 2003. Intracellular localization of a group II chaperonin indicates a membrane-related function. *PNAS* 100:15589-15594.
14. Bebout, M. B., Des Marais' D. J., Discipulo' M., Embaye, T., Ferran Garcia-Pichel, F., Hogan, M., **Jahnke, L.L.**, Keller, R. M., Miller, S. R., Prufert-Bebout, L.E., Raleigh, C.,

- Rothrock, M., and Turk, K. 2002. Long Term Manipulations of Intact Microbial Mat Communities in a Greenhouse Collaboratory: Simulating Earth's Present and Past Field Environments. *Astrobiology* **2**:383-402.
15. Sessions, A. L., **Jahnke, L. L.**, Schimmelmann, A. and Hayes, J. M. 2002. Hydrogen isotope fractionation in lipids of the methane-oxidizing bacterium *Methylococcus capsulatus*. *Geochim. Cosmochim. Acta* **66**:3955-3969.
16. **Jahnke, L. L.**, Eder, W., Huber, R., Hope, J. M., Hinrichs, K.-U., Hayes, J. M., Des Marais, D. J., Cady, S. L., and Summons, R. E. 2001. Signature lipids and stable carbon isotope analyses of Octopus Spring hyperthermophilic communities compared with those of *Aquificales* representatives. *Applied and Environmental Microbiology* **67**:5179-5189.
17. Eder, W., **Jahnke, L.L.**, Schmidt, M and Huber, R. 2001. Microbial diversity of the bine-seawater interface of the Kebrit Deep, Red Sea studied via 16S rRNA gene sequences and cultivation methods. *Applied and Environmental Microbiology* **67**:3077-3085.
18. Beaumont, V.I., **Jahnke, L.L.** and Des Marais, D.J. 2000. Nitrogen isotopic fractionation in the synthesis of photosynthetic pigments in *Rhodobacter capsulatus* and *Anabaena cylindrica* *Organic Geochemistry* **31**:1075-1085.
19. Summons, R. E., **Jahnke, L.L.**, Hope, J.M. and Logan G.A. 1999. 2-Methylhopanoids as biomarkers for cyanobacterial oxygenic photosynthesis. *Nature* **400**:554-557.
20. **Jahnke, L.L.**, Summons, R.E., Hope, J.M., Des Marais, D.J. 1999. Carbon isotopic fractionation in lipids from methanotrophic bacteria II. The effects of physiology and environmental parameters on the biosynthesis and isotopic signatures of biomarkers. *Geochim. Cosmochim Acta* **63**:79-93.
21. Simoneit, B. R., R.E. Summons, R.E. and **Jahnke, L. L.** 1998. Biomarkers as tracers for life on early Earth and Mars. *Origins of Life and Evolution of the Biosphere* **28**:475-483.
22. Tippelt, A., **Jahnke, L.**, Poralla, K. 1998. Squalene-hopene cyclase from *Methylococcus capsulatus* (Bath): a bacterium producing hopanoids and steroids. *Biochimica Biophysica Acta* **1391**: 223-232.
23. Matheson, L.J., **Jahnke, L.L.** and Oremland, R.S. 1997. Inhibition of methane oxidation by *Methylococcus capsulatus* with hydrochlorofluorocarbons and fluorinated methanes. *Applied and Environmental Microbiology* **63**:2952-2956.
24. Summons, R.E., **Jahnke, L.L.** and Simoneit, B.R.T. 1996. Lipid Biomarkers for Bacterial Ecosystems: Studies of Cultured Organisms, Hydrothermal Environments & Ancient Sediments. In: *Evolution of Hydrothermal Ecosystems on Earth (and Mars?)*, CIBA Foundation Symposium 202, Wiley, Chichester, pp. 174-194.
25. **Jahnke, L.L.** and Klein, H.P. 1996. The synthesis of lipid biomarkers by methane-oxidizing bacteria and interpretation of paleoenvironments on early Earth. *Proceedings of*

the First International Conference on Circumstellar Habitable Zones, Travis House Publications, p. 99-108.

26. **Jahnke, L.L.**, Summons, R.E., Dowling, L.M., Zahralis, K.D. 1995. Identification of Methanotrophic Lipid Biomarkers in Cold-Seep Mussel Gills: Chemical and Isotopic Analysis. *Applied and Environmental Microbiology* **61**:576-582.
27. Oremland, R.S., Miller, L.G., Culbertson, C.W., Connell, T.L. and **Jahnke, L.L.** 1994. Degradation of Methyl Bromide by Methanotrophic Bacteria in Cell Suspensions and Soils. *Applied and Environmental Microbiology* **60**:3640-3646.
28. Summons, R.E., **Jahnke, L.L.** and Roksandic, Z. 1994. Carbon isotopic fractionation in lipids from methanotrophic bacteria: Relevance for interpretation of the geochemical record of biomarkers. *Geochimica Cosmochimica Acta* **58**:2853-2863.
29. **Jahnke, L. L.** Effect of Growth Temperature on the Cis/Trans Ratio of Unsaturated Fatty Acid in *Methylococcus capsulatus* (Bath). NASA Tech Briefs, 17:91,1993.
30. **Jahnke, L.L.**, Stan-Lotter, H., Kato, K. and Hochstein, L.I. 1992. Presence of methyl sterol and bacteriohopanepolyol in an outer membrane preparation from *Methylococcus capsulatus* (Bath). *J. Gen. Microbiol.*, **138**:1759-1766.
31. **Jahnke, L.L.** 1992. The effects of growth temperature on the methyl sterol and phospholipid fatty acid composition of *Methylococcus capsulatus* (Bath). *FEMS Microbiol. Letters*, **93**:209-212.
32. Summons, R.E. and **Jahnke, L. L.** 1992. Hopanes and hopanes methylated in ring-A: Correlation of the hopanoids from extant methyltrophic bacteria with their fossil analogues. In: *Biological Markers in Sediments and Petroleum*, Moldowan, J. M., Albrecht, P. and Philp, R. P. (eds.), Prentice-Hall, Englewood Cliffs, N.J., pp.182-200.
33. Summons, R.E. and **Jahnke, L. L.** 1990. Identification of the methylhopanes in sediments and petroleum. *Geochim. Cosmochim. Acta*, **54**:247-251.
34. **Jahnke, L. L.**, Lee, B., Sweeney, M., and Klein, H. P. 1989. Anaerobic Biosynthesis of Unsaturated Fatty Acids in the Cyanobacterium, *Oscillatoria limnetica*. *Archives Microbiology*, **152**:215-217.
35. **Jahnke, L.L.**, and Diggs, K. 1989. Evidence for the Synthesis of the Multi-positional Isomers of Monounsaturated Fatty Acid in *Methylococcus capsulatus* by the Anaerobic Pathway. *FEMS Microbiology Letters*, **58**:183-188.
36. Scattergood, T., Des Marais, D., and **Jahnke, L.** 1987. Life's Origin: The Cosmic, Planetary and Biological Processes. *Planetary Report*, **7**:4-5.
37. **Jahnke, L.L.**, and Nichols, P.D. 1986. Methyl Sterol and Cyclopropane Fatty Acid Composition of *Methylococcus capsulatus* Grown at Low Oxygen Tensions. *J. Bacteriology*, **167**:238-242.

38. Tomilinson, G.A., **Jahnke, L.L.**, and Hochstein, L. I. 1986. *Halobacterium denitrificans*, sp. nov., an Extremely Halophilic Denitrifying Bacterium. Intern. J. Systematic Bacteriology, **36**:66-70.
39. **Jahnke, L.L.**, and Klein, H.P. 1983. Oxygen Requirements for the Formation and Activity of the Squalene Epoxidase in *Saccharomyces cerevisiae*. J. Bacteriology, **155**:488-492.
40. **Jahnke, L.L.**, and Klein, H.P. 1979. Oxygen as a Factor in Eukaryote Evolution: Some Effects of Low Levels of Oxygen on *Saccharomyces cerevisiae*. Origins of Life, **9**:329-334.
41. Klein, H. P., and **Jahnke, L.L.** 1979. Effects of Aeration on Formation and Location of the Acetyl Coenzyme A Synthetase of *Saccharomyces cerevisiae*. J. Bacteriology, **137**:179-184.
42. Klein, H. P., and **Jahnke, L.L.** 1971. Variations in the Localization of Acetyl-CoA Synthetase in Aerobic Yeast. J. Bacteriology, **106**:596-602.
43. Klein, H. P., and **Jahnke, L.L.** 1968. Cellular Localization of Acetyl-CoA Synthetase in Yeast. J. Bacteriology, **96**:16-1639.

## **ABSTRACTS**

1. Vogel, M. B., Des Marais, D. J., **Jahnke, L. L.**, Turk, K. and Kubo, M. (2007) Biosignatures in modern sulfates: texture, composition and depositional environments of gypsum deposits at Guerrero Negro, Baja Mexico. Abstracts Fall meeting American Geophysical Union, B31D-0622.
2. Turk, K. A., **Jahnke L. L.**, Green, S. J., Kubo, M. D., Vogel, M. B. and Des Marais, D. J. (2007) Lipid and phylogenetic analysis of a gypsum-hosted endoevaporitic microbial community. Abstracts Fall meeting American Geophysical Union, B41A-0031.
3. **Jahnke, L.L.** & Summons, R.E. (2006) Compound-specific isotope analysis of cyanobacterial pure cultures and microbial mats: effects of photorespiration? Invited talk for special session in recognition of John M Hayes, Abstracts of 16<sup>th</sup> Annual V.M. Goldschmidt Conference, Australia.
4. **Jahnke, L.L.**, Embaye, T. & Green, S.J. (2006) Cyanobacterial biomarker lipids in hypersaline microbial mats and environmental adaptation. ASTROBIOLOGY 6:151-152.
5. Green, S. J., J.M. Smith, M. Hogan, **L. L. Jahnke**, C. A. Kelley, B.M. Bebout, and L. Prufert-Bebout. 2006. Effect of salinity and sulfate manipulations on the community composition and structure of sulfate-reducing prokaryotes in a hypersaline microbial mat. American Society for Microbiology Annual Meeting. Orlando, FL.
6. **Jahnke, L. L.**, Orphan, V., Turk, K., Embaye, T., Kubo, M. & Summons, R. (2005) Linking archaeal molecular diversity and lipid biomarker composition in a hypersaline

microbial mat community. NAI 2005 Abstracts, Biennial Meeting of the NASA Astrobiology Institute, University of Colorado, Astrobiology 5:287.

7. Parenteau, M. N., **Jahnke, L. L.**, Embaye, T., & Cady, S. L. (2005) Biosignature formation by cyanobacteria and *Chlorofexus* in the shallow deposits of a high iron thermal spring. NAI 2005 Abstracts, Astrobiology 5:287291
8. Turk, K. A., Orphan, V. J., Prufert-Bebout, L. E., Bebout, B. M., **Jahnke, L. L.**, Kubo, M. D. Y., Embaye, T. & Des Marais, D. J. (2005) Geochemical and population changes in a hypersaline microbial mat maintained at lower salinities. NAI 2005 Abstracts, Astrobiology 5:287269
9. **Jahnke, L.L.** (2004). Biomarkers for early Earth and Mars analogs. Second Conference on Early Mars: Geologic, Hydrologic and Climatic Evolution and the Implications for Life. October 11-14, Jackson Hole, WY. (Invited Talk).
10. V. Orphan, **L. Jahnke**, T. Embaye, K. Turk, M. Kubo, B. Bebout, M. Hogan, S. Carpenter, T. Hoehler, M. Discipulo, D. DesMarais. *Phylogenetic Diversity and Metabolic Strategies of Methanogens Associated with Hypersaline Microbial Mats*. Poster, Astrobiology Science Conference, 2004.
11. Love, G.D., Bowden, S.A., Snape, C.E., **Jahnke, L.L.** & Summons, R.E. (2004). Rapid screening of microbial cultures and organic macromolecules to assess biomarker lipid contents using catalytic hydrolysis [Abstract]. Abstracts of 14<sup>th</sup> Annual V. M. Goldschmidt Conference, Copenhagen, Denmark.
12. Orphan, V., **Jahnke, L.**, Embaye, T., Turk, K., Kubo, M., Bebout, B., Hogan, M. & Des Marais, D. (2004). *Lipid biomarkers for a hypersaline microbial mat community* [Abstract]. AbSciCon 2004, NASA Ames Research Center, Moffett Field, CA. *International Journal of Astrobiology*, Supplement 1: 76.
13. **Jahnke, L.L.**, Orphan, V.J., Embaye, T., Turk, K., Kubo, M. & Summons, R.E. (2004). *Lipid biomarkers for a hypersaline microbial mat community* [Abstract]. AbSciCon 2004, NASA Ames Research Center, Moffett Field, CA. *International Journal of Astrobiology*, Supplement 1: 75.
14. **Jahnke, L. L.**, Embaye, T. & Summons, R. E. (2003) Lipid biomarkers for methanogens in hypersaline cyanobacterial mats from Guerrero Negro, Baja California Sur. [Abstract: NASA Astrobiology Institute General Meeting 2003]. Astrobiology, 2(4): 624.
15. **Jahnke, L. L.**, Orphan, V., Embaye, T., Turk, K. A., Kubo, M. and Summons R. E. 2003. Lipid Biomarkers and their carbon isotopic signatures for a hypersaline microbial mat community. Abstracts of the General Meeting of the Geological Society of America, Seattle WA, Paper 187-16.
16. Parenteau, M. N., Embaye, T., Jahnke, L. L., and Cady, S. L. 2003. Microbial biosignatures in high iron thermal springs. Eos Trans. AGU 84, Fall Meet. Suppl., Abstract B12B-0778.

17. Orphan, V. J., 2003 ASM
18. Jahnke, L. L., Embaye, T., Turk, K. A., and Summons, R. E. (2002) Hypersaline microbial mat lipid biomarkers. *Astrobiology Science Conference* (p. 201) NASA Ames Research Center.
19. Sessions, A., Jahnke, L., Schimmelmann, A. and Hayes, J. (2002) Sources of hydrogen and H-isotopic fractionations in bacterial lipid biosynthesis. *Astrobiology Science Conference* (p. 176) NASA Ames Research Center.
20. Habicht, K., Des Marais, D. and Jahnke, L. (2002) Sulfur and carbon isotope fractionation during lithotrophic growth by the hyperthermophilic sulfate reducer *Archaeoglobus* sp. Abstracts of the Astrobiology Science Conference (p. 162) NASA Ames Research Center.
21. Summons, R., Jahnke, L., Cullings, K. and Logan, G. (2002) Absence of sterol biosynthesis in cyanobacteria. *Astrobiology Science Conference* (p.151) NASA Ames Research Center.
22. Prufert-Bebout, L., Keller, R., Miller, S., & Jahnke, L. (2002) From Field to Laboratory: A new database approach for linking microbial field ecology with laboratory studies. *Astrobiology Science Conference* (p.294) NASA Ames Research Center, Moffett Field, CA
23. Summons, R. E., Embaye, T. Jahnke, L. L., Baumgartner, M. (2002) New ether lipid biomarkers from a hyperthermophilic methanogen. In Abstracts of 12<sup>th</sup> Annual V. M. Goldschmidt Conference, Davos, Switzerland.
24. Summons, R. E., Embaye, T. Jahnke, L. L., Baumgartner, M. (2002) Molecular signatures of methanogens in cultures and environmental samples. Eos Transaction of the AGU, 83(47), B51-B0723
25. Summons, R.E., Love, G. D., Snape, C.E., Murray, I., Logan, G. A. and Jahnke, L.L. Analysis of bacterial lipids using hydrolysis and GC-MS. *Abstracts for 20<sup>th</sup> IMOG, Nancy France*. 2001.
26. Jahnke, L. L., Summons, R. E., Hope, J. M. and Cullings, K. W. Carbon isotopic fractionation associated with cyanobacterial biomarkers: 2-Methylhopanoids and methyl-branched alkanes. In 11<sup>th</sup> Annual V. M. Goldschmidt Conference Abstract #3748. LPI Contribution No. 1088, Lunar and Planetary Institute, Houston (CD-ROM) 2001.
27. Jahnke, L. L., Eder, W., Huber, R. Hinrichs, K.-U., Hayes, J. M., Des Marais, D. J., Cady, S. L., Hope, J. M. and Summons, R. E. Composition of hydrothermal vent microbial communities as revealed by analysis of signature lipids, stable carbon isotopes and *Aquificales* cultures. In 11<sup>th</sup> Annual V. M. Goldschmidt Conference, Abstract #3717. LPI Contribution No. 1088, Lunar and Planetary Institute, Houston (CD-ROM) 2001..
28. Londry, K. L., Jahnke, L. L. and Des Marais, D. J. Stable carbon isotope ratios of lipid biomarkers and biomass for sulfate-reducing bacteria grown with different substrates.

In 11<sup>th</sup> Annual V. M. Goldschmidt Conference, Abstract #3404. LPI Contribution No. 1088, Lunar and Planetary Institute, Houston (CD-ROM) 2001.

29. Jahnke, L. L., Eder, W., Huber, R. Hinrichs, K.-U., Hayes, J. M., Des Marais, D. J., Cady, S. L., Hope, J. M. and Summons, R. E. Composition of hydrothermal vent microbial communities as revealed by analysis of signature lipids, stable carbon isotopes and *Aquificales* cultures. Second General Meeting of NASA Astrobiology Institute, Carnegie Institute, Washington DC, April 2001.
30. Bebout, B. M., Des Marais, D. J., Garcia-Pichel, F., Hogan, M., Jahnke, L.L. and Keller, R. M. Ecophysiological Changes in Microbial Mats Incubated in a Greenhouse Collaboratory. Second General Meeting of NASA Astrobiology Institute, Carnegie Institute, Washington DC, April 2001.
31. Sessions, A. L., Jahnke, L. L., Schimmelmann, A. and Hayes, J. M. Methane-derived hydrogen in lipids produced by aerobic methanotrophs. *Eos. Trans. AGU*, 82(47), Fall Meet. Suppl., Abstract B12B-0126, 2001.
32. Summons, R. E., Jahnke, L. L., Cullings, K. W., Logan, G. A. Cyanobacterial biomarkers: Triterpenoids plus steroids? *Eos. Trans. AGU*, 82(47), Fall Meet. Suppl., Abstract B22D-0184, 2001.
33. Jahnke, L. L., Farmer, J. D., Summons, R.E. and Klein, H. P. Hopanoid biomarker preservation in coniform (*Phormidium*) Stromatolites in siliceous thermal springs, Yellowstone National Park. Abstracts First Astrobiology Science Conference, p. 267 April 2000.
34. Summons, R.E., Jahnke, L.L., Hope, J.M. and Logan, G.A. 2-Methylhopanoids: Biomarkers for cyanobacteria and for oxygenic photosynthesis. Goldschmidt Conference, 1999.
35. Jahnke, L.L., Summons, R.E., Farmer, J.D. and Klein, H.P. 1999. Organic biomarker preservation in coniform (*Phormidium*) stromatolites in siliceous thermal springs, Yellowstone National Park. *Geol. Soc. Amer. Abstracts with Programs*, v. 31(7): A-433.
36. Sessions, A., Jahnke, L., Londry, K. and Hayes, J. Hydrogen isotope fractionation in microorganisms. Abstracts of the Amer. Geophysical Union, Fall 1999.
37. Jahnke, L. L. Evidence for the Early Evolution of Oxygenic Photosynthesis. Abstracts of the Amer. Geophysical Union, Fall 1999. (Invited Talk)
38. Farmer, J., Bebout, B. and Jahnke, L. 1997 Fossilization of coniform (*Phormidium*) stromatolites in siliceous thermal springs, Yellowstone National Park. . *Geol. Soc. Amer. Abstracts with Programs*, v. 26(6): 113.
39. Jahnke, L.L. and Summons, R.E. Carbon isotope fractionations associated with methanotrophic growth with the soluble and particulate methane monooxygenases. *Abstr. Annu. Meet. Amer. Soc. Microbiol.*, p.329, 1996.

40. Beaumont, V. and Jahnke, L.L. Nitrogen isotopic fractionation during N<sub>2</sub> metabolism by purple non-sulfur bacteria. *8th Meeting of the Intern. Soc. for the Origin os Life*, Orléans, France, July 1996.
41. Simoneit, B.R.T., Summons, R.E. and Jahnke, L.L. Biomarkers as tracers for life on early Earth and Mars. 8th Meeting of the Intern. Soc. for the Origin of Life, Orléans, France, July 1996. Tippelt, A., Jahnke, L. and Poralla, K. Cloning and sequencing of a triterpenoid-cyclase from *Methylococcus capsulatus* (Bath). German Microbiol. Soc., Stuttgart, March 1995.
42. Summons, R.E., Hope, J.M., Dowling, L.M., Jahnke, L.L., Largeau, C., and Metzger, P. Carbon Isotopic Fractionation in Lipid Biosynthesis by Algae and Cyanobacteria. *Abstr. for EAOG*, Spain, Sept. 1995.
43. Jahnke, L.L. Identification and Survival of Bacteriohopanepolyol in a Hot Spring Microbial Mat. Symposium on Biodiversity, Ecology and Evolution of Thermophiles in Yellowstone Natn. Pk., Yellowstone Natn. Pk., Sept. 1995.
44. Jahnke, L.L., Zahiralis, K. D. and Klein, H. P. Identification of Methanotrophic Biomarker Lipids in the Symbiont-Containing Gills of Seep Mussels. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, 1994.
45. Jahnke, L.L. and Munoz, E. Characterization of two facultatively anoxygenic cyanobacteria isolated from a hypersaline microbial mat. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, (I77) p. 252, 1993.
46. Oremland, R., Blunden, P., Culbertson, C., Miller, L., Coulatkis, D. and Jahnke, L. Oxidation of Hydrochlorofluorocarbons (HCFCs) and Methylbromide (MeBr) by Methanotrophic Soils and Cell Suspensions. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, (Q185) p. 380, 1993.
47. Summons, R.E. and Jahnke, L.L. Methylotrophic bacteria: Biomarker lipids and their C-isotopic compositions. ACS Symp. "Compound Specific Isotope Analysis in Organic & Petroleum Geochemistry", San Francisco, 1992.
48. Jahnke, L.L. and Summons, R.E. Carbon isotopic fractionation of lipid biomarkers in methanotrophic bacteria. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, (Q-284) p.323, 1991.
49. Jahnke, L.L. and Summons, R.E. Methylotrophic bacteria: Biomarker lipids and controls on their carbon isotopic composition. *Intern. Symp. Environ. Biogeochem.*, San Francisco, p.18-19, 1991.
50. Jahnke, L. L. Lipid Characterization of Outer and Inner Membranes from *Methylococcus capsulatus*. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, (K-27) p. 224, 1990.
51. Jahnke, L.L. The effects of oxygen on the evolution of microbial membranes. Fourth Symp. Chem. Evol. and Origin & Evol. of Life, Moffett Field, p. 62, 1990.

52. Jahnke, L. L. Anomalous synthesis of *trans* unsaturated fatty acids in methanotrophic bacteria in response to decreased growth temperature. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p.246, 1989. Jahnke, L. L., Lee, B., and Klein, H. P. Biosynthesis of Unsaturated Fatty Acids in *Oscillatoria limnetica*. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p. 216, 1988.
53. Jahnke, L. L. The effect of oxygen on lipid biosynthesis in prokaryotes. Organic Geochemical Biomarker Techniques Applied to the Palaeobiological Record Conference, Canberra, Australia, 1988. (Invited Talk)
54. Jahnke, L. L. Analysis of Cyclic Triterpene Content in Methane Oxidizing Bacteria. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p. 231, 1987.
55. Volkmann, C. M., Munoz, E., and Jahnke, L. L. In Vitro Synthesis of Saturated and Unsaturated Fatty Acids in the cyanobacterium, *Phormidium luridum*. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p. 198, 1986.
56. Jahnke, L. L., and Diggs, K. Mechanism for the Synthesis of Unsaturated Fatty Acids in *Methylococcus capsulatus*. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p. 222, 1986.
57. Jahnke, L. L. The Effects of Low Oxygen on the Synthesis of Unsaturated Fatty Acids and Sterols - Implications for the Evolution of Eukaryotes. *Origins of Life*, 16:317-318, 1986.
58. Jahnke, L. The Effects of Growth Conditions on the Membrane Lipids of *Methylococcus capsulatus* (Bath). *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p. 206, 1985.
59. Tomlinson, G. A., Jahnke, L. L., and Hochstein, L. I.. *Halobacterium denitrificans*, A Extremely Halophilic Denitrifying Bacterium. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p. 211, 1985.
60. Jahnke, L. L. Oxygen and the Evolution of Metabolic Pathways. 2nd. Symp. Chem. Evol. and Origin & Evol. of Life, Abstracts p. 71, Moffett Field, California, 1985.
61. Volkmann, C., Jahnke, L., and Klein, H. P. Oxygen Requirements for the Synthesis of Unsaturated Fatty Acids in Cyanobacteria. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p. 191, 1983.
62. Jahnke, L.L., Volkmann, C. and Klein, H. P. Oxygen Requirements for the Synthesis of Sterols and Unsaturated Fatty Acids in Microorganisms. 6th Intern. Symp. Environ. Biogeochem., Santa Fe, 1983.
63. Jahnke, L., and Klein, H. P. Conversion of Squalene to Sterol in Yeast in Vitro. *Abstr. Annu. Meet. Am. Soc. Microbiol.*, p.157, 1982.
64. Jahnke, L., Volkmann, C., and Klein, H. P. Oxygen Requirements for Lipid Synthesis in Microorganisms. 1st Symp. Chem. Evol. and Origin of Life, Moffett Field, California, 1982.

65. Jahnke, L., and Klein, H. P. Effects of Chloramphenicol on the Formation of the Isoenzymes of Acetyl-CoA Synthetase of *Saccharomyces cerevisiae*. Abstr. Annu. Meet. Am. Soc. Microbiol., p. 157, 1979.
66. Eaton, N. R., Jahnke, L. L., and Klein, H. P. Control of Acetyl-CoA Synthetase Formation in Yeast. 6th International Congress of Yeast Genetics and Microbiology, Rochester, New York, 1978.
67. Klein, H. P., and Jahnke, L. L. Variations in the Sub-cellular Localization of Acetyl Coenzyme A Synthetase from Aerobic Cells as Revealed by Triton X-100 Treatment. Pacific Slope Biochemical Conference, Vancouver, B. C., 1973.
68. Klein, H. P., and Jahnke, L. L. Acetyl-CoA Synthetase, Change in Cellular Localiztion in Aerobic Yeast Cells. In Bacteriol. Proceedings G209, 1970.