

CURRICULUM VITAE

FRANK THOMSON ROBB

PERSONAL DATA:

Date of Birth: 29 November, 1944.
Place of Birth: Cape Town, South Africa.
Citizenship: US

Married, four children

EDUCATION

B.Sc. 1968 University of Cape Town, South Africa.
[Majors: Zoology (First Class), General Physiology (First Class)].

B. Sc.(Honours) 1969 University of Cape Town [Major: Zoology (First Class)].

Ph.D. 1973 University of California, Riverside, USA. (Biology).
Sponsor: Dr W. L. Belser.

EXPERIENCE IN HIGHER EDUCATION

2010-present University of Maryland, Baltimore. Dept of Microbiology and Immunology, Professor

1995-2010 University of Maryland, Center of Marine Biotechnology, Professor.

2000-2008 University of Maryland, Center of Marine Biotechnology, Associate Director.

1996- 1997 University of Maryland, Center of Marine Biotechnology, Acting Director.

1988- 94 University of Maryland, Center of Marine Biotechnology, Associate Professor.

1989 -93 Joint appointment: Univ. of Maryland, Dept. of Microbiology, UMCP, Associate Professor.

1983 - 88 Univ. of Cape Town, Microbiology Dept, Rondebosch, South Africa. Associate Professor.

1980 - 83 University of Cape Town, Microbiology Department. Senior Lecturer.

1980 - 88 University of Cape Town, Microbiology Department. Acting Head. Temporary appointments to Acting Head for 4 - 8 weeks per year, with membership of the University Senate.

1975 - 80 Rhodes University, Grahamstown, South Africa. Dept of Microbiology. Senior Lecturer.

1974 - 75. Rhodes University, Grahamstown, South Africa. Department of Microbiology. Lecturer.

1970 - 73 University of California, Riverside, CA. Teaching Assistant.

OTHER UNIVERSITY EXPERIENCE

2008-present Chair, UMBI Staff and Faculty Senate

1999-2001 Chairman, Science Steering Group of the VIRTUE (Virtual University) consortium.

- 1985-86** National Institutes of Health, Bethesda, MD. Visiting Scientist.
- 1982** Genetics Institute, University of Bayreuth, West Germany. Visiting Professor.
- 1979 -80** Department of Genetics, University of Washington, Seattle, USA. Research in collaboration with Professor C. Furlong on reconstitution of membrane uptake systems. Visiting Scientist.
- 1974** University of Chicago, Argonne National Laboratory, IL. Postdoctoral Fellow.
Sponsor: Dr. H. Kubitschek.
- 1973** University of California, San Diego, CA. Postdoctoral Fellow.
Sponsor: Dr. S. Mills.
- 1970** University of Cape Town Medical School, Department of Physiology. Technician.

HONOURS RECEIVED:

- 2010 Member, American Academy of Microbiology
- 1987 Fellow of the University of Cape Town. A research fellowship.
- 1983 - 84 Acting President, Experimental Biology Group, Cape Town.
- 1969 Harry Crossley Bursary (UCT). Sir Robert Kotze Bursary (UCT), held concurrently in California.
- 1968 Class Medal for highest score in General Physiology, University of Cape Town.

RESEARCH SUPPORT

Ongoing Research Support.

TEDCO Maryland Innovation Initiative. Robb (PI) Woodard (UMCP, Co PI). "NitroExpress": A Novel System for Recombinant Protein Expression. \$150,000. 12/9/2015 - 9/9/2016. Nitric Oxide autoregulation of gene expression used for induction of recombinant protein expression.
Effort :10%

NASA Exobiology. Robb (PI) Vetriani (Rutgers University, CoPI). "Sentinel Microbes that Utilize Carbon Monoxide as Energy and Carbon Source". \$ 547,661. 06/15/2015-06/15/2018. Effort : 15%

Sponsored Research: PATH (Seattle) Lees (PI) Robb (CoPI). 5/1/2013-6/31/2015. CRM197 expression in E. coli using extremophile chaperones. Direct Cost: \$100,000. Effort :5%.

NIST/IMET Postdoctoral Program. Robb (PI). Bearden (NOAA, CoPI). Compatible solutes from extremophiles for cryopreservation and metabolite stabilization. \$276,252. Effort 10% 1/1/2016-31/12/2017.

Recently Concluded Grant Support

NSF C-DEBI. Robb (PI) 10/1/2014-9/30/2015. Carbon Monoxide as a Key Metabolite in Carbon and Hydrogen Flux in the Marine Subsurface. \$50,000. Effort: 5%

Korean Institute of Ocean Science and Technology Robb (PI) 1/1/14 – 12/31/14
A Systems Biology Approach to Algal Biomass Utilization by Hyperthermophiles

Total Budget: \$37,000. Effort: .6 calendar months

The Deep Carbon Observatory (WHOI subcontract) Robb (PI) 6/1/14 – 11/30/14
Metabolic Reconstruction of *Desulforudis audaxviator*, A Subsurface Sentinel Species
Direct Cost: \$25,000.

Sponsored Research: PATH (Seattle) Lees (PI) Robb (CoPI). 5/1/2013-6/31/2015.
CRM197 expression in *E. coli* using extremophile chaperones. Direct Cost: \$100,000
Chaperone technology to develop high level expression of a high-value vaccine component.
Overlap: A non-competitive renewal of this project is approved.
Completed Research Support (Past 3 Years)

Korean Institute of Science and Technology. Robb, (PI) 6/1/ 12-5/ 31/14.
Mutation of Chaperonins in a Hyperthermophile to Adjust Temperature Range.
Genetic manipulation of proteostasis in a hydrogen producing hyperthermophile.

University of California, Berkeley. Robb, (PI) 2/1/2008-6/30/2013.
Bioprospecting for High Temperature Lignocellulases.

Air Force Office of Scientific Research. Robb (PI) 10/1/2010-06/30/2013
Novel protein folding pathways for protein salvage and recycling
Lednev, (SUNY Albany) CoPI
Goal: Isolate and characterize chaperone proteins from hyperthermophiles and determine the basis for their extreme thermostability and ability to disperse amyloid fibrils.
Overlap: There is no overlap of the above grant with the current proposal.
Role: PI

Maryland Industrial Partners. Robb (PI) 9/ 1/2012-8/31/2013
Metabolic engineering of *E. coli* for enhanced isoprene production.
Goal: Elevation of growth temperature to enable isoprene removal from ongoing fermentation.

Gates Foundation GCE. Galen (PI) 11/1/10-10/31/12. Increased stability and immunogenicity of bacterial vaccines expressing intracellular thermophilic chaperones.
Chaperone engineering for long term storage and enhanced immunogenicity of vaccines.
Role: CoPI.

NSF 0747394 Colman (PI) 8/1/08-9/30/12
Carbon monoxide dynamics in geothermal mats and Earth's early atmosphere.
This project will examine the turnover and metabolic fates of carbon monoxide in high temperature microbial mats that model the archaean anaerobic atmosphere.
Role: CoPI

R41 GM085941-01A1 Robb (PI) 5/1/09 – 4/31/11
with A. Slesarev, Fidelity Systems, Inc.
Novel Protein Expression Systems
Role: PI

SOUTH AFRICAN FUNDING

1984 - 88 Comprehensive Support Award, CSIR Foundation for Research Development.
1983 - 86 Leader of four research projects of the Benguela Ecology Programme, SANCOR.
1981 - 86 Research supported by the C.S.I.R. Unit for Microbial Genetics, University of Cape Town.
1979 - 80 Sabbatical support at Dept of Genetics, Univ. of Washington, Seattle, U.S.A.
1975 - 83 Research funded by the Atomic Energy Board, South Africa.

1974 - 81 Research funded by the Council for Scientific and Industrial Research, South Africa

PATENTS

US PTO 9,334,515 **issued 05/10/2015**, " Polypeptides For Use in the Deconstruction of Cellulose ".
Inventors: Joel Edward Graham, Melinda E. Clark, Frank Thomson Robb,

US PCT: 61/670,256 2014 "Nitric Oxide Regulation of Recombinant Protein Expression" UMB
Docket Number: FR-2012-071. F.T. Robb.

US PCT 2013: " Small heat shock proteins from extremophiles for improving immunogenicity of live attenuated bacterial oral vaccines." Galen J., Wang G. and FT Robb (PCT filed Oct 24, 2011)

USPTO " Polypeptides for use in the deconstruction of cellulose." J.E. Graham, H.W. Blanch, D.S. Clark, M.E. Clark, F.T. Robb. Publication date: Dec 25, 2013. Filed Applications: CN103124789A, WO2012015605A1,EP2598642A1.

US PCT/PTO 2012-064560: "Improved Folding of Recombinant Proteins Via Co-Expression of Archaeal Chaperones" H. Smith and FT Robb (PCT 2008, PTO filed 12/15/2010).

US PTO 8685729, PCT 2008/054978 "Heterologous expression of extremophile heat shock proteins and chaperones in microorganisms to increase tolerance to toxic compounds" D S. Clark, T. Whitehead, F. T. Robb, P. Laksanalamai, A. Jiemjit. Priority Date 26 Feb 2007. Issued April 1, 2014.

US PTO 12/065,152: "Thermostabilization of DNA Polymerase by protein folding pathway from a hyperthermophilic Archaeon, *Pyrococcus furiosus*." F T Robb (PCT 2006), and CIP 7,247,432. Issued December 25, 2008

US PCT "Novel filamentous hyperstable chaperone with protein and cellular stabilization properties." US Appl'n filed 8/25/09. Joint UMD and UC Berkeley.

US PCT 60/624,488. "Isothermal amplification of megabase DNA targets." FT Robb, J DiRuggiero, DL Maeder and Z Kelman. (2004).

US PTO 6,579,703: "Enhanced protein thermostability and temperature resistance", FT Robb and P Laksanalamai , CIP June 17, 2003. US Patent 6,579,703, Issued June 20, 2002. European patent 019285543-2110 issued 2007.

US PTO 5,719,056 "Proteins from *Pyrococcus furiosus*." S.R. Brummet, F.T. Robb, K.M. Borges, K. Hujer, S.T. Domke. Issued February 12, 1998

US PTO 5,610,066 "Nucleic acid modifying proteins from *Pyrococcus furiosus*." C.W. Fuller, J. Szasz, F.T. Robb, K.M. Borges, M. Davis issued March 11, 1997.

Invention Disclosures filed:

- "Stabilization of Bacterial Collagenase" (Johnstone, Robb and Singleton)
- "Hyperthermostable Glutamate Dehydrogenase." (Robb)
- "Hyperthermostable DNA Polymerase," (Robb, Adams)
- "Gene encoding a prolyl endopeptidase from the hyperthermophilic archeum, *Pyrococcus furiosus*." Robinson, Schreier and Robb)
- "Hyperthermophilic cellulases with deconstruction activity" (UC Berkeley 2010 submission for PCT File 67779-30009-00)

PUBLICATIONS:

1. Field, J.G. and **F.T. Robb**. 1970. Gradient analysis of rocky shore samples from False Bay. *Zoologica Africana*. 5: 191-210.

2. **Robb, F.T.** and L. Isaacson. 1970. Nanoliter constant volume pipettes: simple construction. *J. Appl. Physiol.* 38: 373-374.
3. Peak, M.J., **F.T. Robb**, J. Day and A. Marais. 1971. An improved method for density gradient zone electrophoresis. *Analyt. Biochem.* 36: 505-510.
4. Peak, MJ, **FT Robb** and CW Sapsford. 1971. Comparison of Lactate Dehydrogenase isozymes from Weddell and Cape Fur seals. *Comp. Biochem. Physiol.* 38B:471-474. DOI: 10.1016/0305-0491(71)90027-7.
5. **Robb F.T.**, M.A. Hutchinson and W.L. Belser. 1971. Anthranilate synthetase from *Serratia marcescens*: purification and properties. *J. Biol. Chem.* 246: 6908-7012.
6. **Robb, F.T.** and W. L. Belser. 1972. Anthranilate synthetase: *in vitro* complementation between *S. marcescens* and *E. coli* subunits. *Biochem. Biophys. Acta.* 285: 243-252.
7. **Robb, F.T.**, J.H. Hauman and M.J. Peak. 1977. Similar spectra for inactivation of two leucine transport systems by monochromatic light. *Photochem. Photobiol.* 27: 465-469.
8. Robb, S.M., D.R. Woods, **F.T. Robb** and J.K. Struthers. 1977. Rifampicin resistant mutants supporting bacteriophage growth in stationary phase *Achromobacter* cells. *J. Gen. Virol.* 35: 117-123.
9. Reid, G.C., **F.T. Robb** and D.R. Woods. 1978. Regulation of extracellular collagenase production in *Achromobacter iophagus*. *J. Gen. Microbiol.* 109: 149-154.
10. Robb, S.M., D.R. Woods and **F.T. Robb**. 1978. Phage growth characteristics on stationary *Achromobacter* cells. *J. Gen. Virol.* 71: 265-272.
11. Robbertse, P.J., D.R. Woods, A.H. Reay and **F.T. Robb**. 1978. Simple and sensitive procedure for screening collagenolytic bacteria and the isolation of collagenase mutants. *J. Gen. Microbiol.* 106: 373-376.
12. Barber, J.M., **F.T. Robb**, J. Webster and D.R. Woods. 1979. Bacteriocin production by *Clostridium acetobutylicum* in an industrial fermentation process. *Appl. Environ. Microbiol.* 37: 433-437.
13. Mossie, K.G., D.T. Jones, **F.T. Robb** and D.R. Woods. 1979. Characterization and mode of action of a bacteriocin produced by a *Bacteroides fragilis* strain. *Antimicrob. Agents Chemother.* 16: 724-730.
14. **Robb, F.T.**, B.R. Davies, R. Cross, C. Kenyon and C. Howard-Williams. 1979. Cellulolytic bacteria as primary colonisers of *Potamogeton pectinatus* L (Sago Pond Weed) from a brackish south temperate coastal lake. *Microbial Ecol.* 5: 167-177.

15. **Robb, F.T.** and M.J. Peak. 1979. Effect of monochromatic UV light on the lactose permease of *E. coli*. Photochem. Photobiol. 30: 378-383.
16. Jones, D.T., **F.T. Robb** and D.R. Woods. 1980. Effect of oxygen on the survival of *Bacteroides fragilis* after far-UV irradiation. J. Bacteriol. 144: 1179-1181.
17. Mossie, K.G., D.T. Jones, **F.T. Robb** and D.R. Woods. 1980. Rifampicin and bacteriocin resistance in *Bacteroides fragilis*. Antimicrob. Agents Chemother. 17: 838-841.
18. Reid, G.C., D.R. Woods and **F.T. Robb**. 1980. Peptone induction and rifampicin insensitive collagenase production by *Vibrio alginolyticus*. J. Bacteriol. 142: 447-454.
19. **Robb, F.T.** and C.E. Furlong. 1980. Reconstitution of binding protein dependent transport in spheroplasts derived from a binding protein negative *E. coli*. K12 mutant and from *Salmonella typhimurium*. J. Supramol. Struct. 13: 183 -188.
20. Robb, S.M., **F.T. Robb** and D.R. Woods. 1980. Physiological and morphological characteristics of stationary phase *Vibrio* cells able to support phage growth. J. Gen. Microbiol. 119: 405-412.
21. Hare, P., S. Long, **F.T. Robb** and D.R. Woods. 1981. Regulation of exoprotease production by temperature and oxygen in *Vibrio alginolyticus*. Arch. Microbiol. 130: 276-280. 21.
22. Long, S., M.A. Mothibeli, **F.T. Robb** and D.R. Woods. 1981. Regulation of extracellular protease production by histidine in a collagenolytic *Vibrio alginolyticus* strain. J. Gen. Microbiol. 127: 193-199.
23. Mossie, K.G., **F.T. Robb**, D.T. Jones and D.R. Woods. 1981. Inhibition of RNA polymerase by a bacteriocin from *Bacteroides fragilis*. Antimicrob. Agents Chemother. 20: 437-442.
24. Bowden, G., M.A. Mothibeli, **F.T. Robb** and D.R. Woods. 1982. Regulation of hut enzymes and extracellular protease activity in *Vibrio alginolyticus* hut mutants. J. Gen. Microbiol. 128: 2041-2045.
25. **Robb, F.T.**, S.M. Robb, M.A. Mothibeli and D.R. Woods. 1982. Pleiotrophic mutations affecting leucine transport and phage absorption in *Vibrio* strains. S.A. J. Sci. 78: 122-123.
26. Bodasing, S., **F.T. Robb** and D.R. Woods. 1983. Regulation of nitrogen catabolic enzymes in *Vibrio alginolyticus*. FEMS. Microbiol. Letts. 19: 175-177.
27. Davis, C.L., K. Koop, D.G. Muir, W. Petrie and **F.T. Robb**. 1983. Discrete populations of bacteria in adjacent kelp dominated ecosystems. Mar. Ecol. Prog. Series 13: 115.

28. Groarke, J.M., W.C. Mahoney, J.N. Hope, C.E. Furlong, **F.T. Robb**, H. Zalkin and M.A. Hermodson. 1983. The amino acid sequence of D-ribose-binding protein from *Escherichia coli* K12. J. Biol. Chem. 12952-12956.
29. Seiderer, L.J., C. L. Davis, **F.T. Robb** and R.C. Newell. 1984. Utilisation of bacteria as a nitrogen resource by the kelp bed mussel, *Choromytilus meridionalis* Krauss. Mar. Ecol. Prog. Series. 15: 109-116.
30. Bodasing, S., P.W. Brandt, **F.T. Robb** and D.R. Woods. 1985. Purification and regulation of glutamine synthetase in a collagenolytic *Vibrio* strain. Arch. Microbiol. 140:369-374
31. Davis, C.L. and **F.T. Robb**. 1985. Maintenance of different mannitol uptake systems in oxidative and fermentative marine bacteria during starvation. Appl. Environ. Microbiol. 50:743-748.
32. Roberts, C.H., G.M. Branch and **F.T. Robb**. 1985. The effect of salinity and temperature variations on the bacterial population in the Bot River Estuary. Trans. Roy. Soc.SA. 45: 347-352.
33. Roberts, C.H., G.M. Branch and **F.T. Robb** . 1985. The annual cycle of free-floating bacteria in the Bot River Estuary. Trans. Roy. Soc.SA. 45: 353-362.
34. Deane, S., F.T. Robb and D.R. Woods. 1986. Isolation and characterisation of a *Vibrio alginolyticus* mutant that overproduces extracellular proteases. J. Gen. Microbiol. 132: 893-898.
35. Muir, D.G., L.J. Seiderer, C.L. Davis, S.J. Painting and **F.T. Robb**. 1986. Lysis and absorption of bacteria by mussels, *Choromytilus meridionalis* collected under upwelling and downwelling conditions. S.A.J. Mar. Sci. 4: 169-170.
36. Seiderer, L.J. and F.T. Robb. 1986. Adaptive features of a bacteriolytic enzyme from the style of the mussel *Choromytilus meridionalis* in response to environmental fluctuations. Proc. 2nd Int. Colloq. of Marine Bacteriol,pp427-434. Ed. D. Priuer, Brest, France.
37. Da Silva, F.M., **F.T. Robb**, and A.C. Brown. 1986. Temperature activation of foot muscle D-lactate dehydrogenase in the whelk *Bullia digitalis*. Biochim. Biophys. Acta. 872: 286-293.
38. Maharaj, R., **F.T. Robb** and D. R. Woods. 1986. Temperature and oxygen regulated expression of a glutamine synthetase gene from *Vibrio alginolyticus* cloned in *Escherichia coli*. Arch. Microbiol. 146: 30-34.
39. Seiderer, L.J., C.L. Davis, **F.T. Robb** and R.C. Newell. 1987. Digestive enzymes of the anchovy, *Engraulis japonicus*, in relation to diet. Mar. Ecology Prog. Ser. 35: 15-23.
40. **Robb, F.T.** B. Rosenblum and C.E. Furlong. 1980. Binding protein dependent transport in spheroplasts derived from a binding protein negative *E. coli*. K12 mutant and from *Salmonella typhimurium*: Induction and reconstitution.. Progress

- in Clinical and Biological Research, Membrane Transport and Neuroreceptors, eds D.Oxender, A. Blume, I. Diamond and C. Fred Fox.
41. Deane, S., **F.T. Robb** and D.R. Woods. 1987. Production and activation of an SDS-resistant exoprotease of *Vibrio alginolyticus*. J. Gen. Microbiol. 133: 391-398.
 42. Scholle, R.R., Coyne, V.E., Maharaj, R., **Robb, F.T.** and D.R Woods. 1987. Expression and regulation of a *Vibrio alginolyticus* sucrose utilization system cloned in *Escherichia coli*. J. Bacteriol. 169: 2685-2690.
 43. Deane, S., R.M. Maharaj, **F.T. Robb** and D.R. Woods. 1987. Cloning, expression and release of a *Vibrio alginolyticus* SDS resistant Calcium dependent exoprotease in *Escherichia coli*. J. Gen. Microbiol. 133: 2995-2302
 44. Seiderer, L.J., R.C. Newell, **F.T. Robb**, C.M. Turley and K. Schultes. 1987. Novel bacteriolytic fauna associated with the style microflora of the mussel *Mytilus edulis*. J. Exp. Mar. Ecol. 110: 213-224.
 45. Ito, F., **F.T. Robb**, J.G. Peak and M.J. Peak. 1988. Base-specific damage induced by 4-thiouridine photosensitization with 334-nm radiation with M13 phage DNA. Photochem. Photobiol. 47: 231-240.
 46. **Robb, F.T.**, D. Muir, and C. L. Davis. 1986. Maintenance of discrete bacterial populations in adjacent marine habitats. Proc. 2nd Int. Colloq.of Marine Bacteriol.pp 185-191, Brest, France.
 47. 43. Becker, I.I., R. Kirby, W.S. Grant and **F.T. Robb**. 1988. Evolutionary divergence between sympatric species of southern African hakes. II. Analysis of mitochondrial DNA. Heredity. 61: 21-30.
 48. **Robb, F.T.** 1989. "Protozoa" - chapter in KNOWLEDGE Encyclopaedia. Ed. .D.de Beer, Human and Rousseau, Cape Town.
 49. Furano, A. V., S. M. Robb and **F.T. Robb**. 1988. The structure of the regulatory region of the rat L1 (L1Rn, long interspersed repeated) DNA family of transposable elements. Nucl. Acids Res. 16: 9215-9231.
 50. Deane, S., **F.T. Robb**, S.M. Robb and D.R. Woods. 1989. DNA sequence of an SDS resistant calcium dependent protease A from *Vibrio alginolyticus*. Gene. 76: 281-288.
 51. Scholle, R., S.M. Robb, **F.T. Robb** and D.R. Woods. 1989. Nucleotide sequence of the *Vibrio alginolyticus* sucrose gene. Gene: 80: 49-56.
 52. **Robb, F.T.**, A.R. Place and H.J. Schreier. 1991. Life at the Edge: The Molecular Evolution of the Archaea, in: The Unity of Evolutionary Biology: Proceedings of the Fourth International Conference of Systematic and Evolutionary Biology. Vol 1, pp 442-444; Ed. E. R Dudley. Dioscorides Press, Portland, USA.

53. **Robb, F. T.**, J-B Park and M. W. W. Adams. 1992. Characterization of an extremely thermostable glutamate dehydrogenase: A key enzyme in the primary metabolism of the hyperthermophilic archaeobacterium, *Pyrococcus furiosus*. *Biochim. Biophys. Acta.* 1120: 267-272.
54. Fleischmann, E.M., A.R. Place, **F. T. Robb** and H.J. Schreier (Eds.) 1991. *Protocols for Archaeobacterial Research*. University of Maryland Press. College Park, USA.
55. Klump, H.H, J. DiRuggiero, M. Kessel, M.W.W. Adams and **Robb, F. T.** 1992. "Extremely thermostable glutamate dehydrogenase from the hyperthermophile *Pyrococcus furiosus*.: Thermal activation and denaturation. *J. Biol Chem.* 267: 22681- 22685.
56. DiRuggiero, J., **F.T. Robb**, R. Jagus, H. H. Klump, K. M. Borges, M. Kessel and Michael W. W. Adams. 1993 Cloning, Characterization and *in vitro* Expression of an extremely thermostable glutamate dehydrogenase from a novel hyperthermophilic Archeon, ES4. *J. Biol. Chem.* 268: 17767 - 17744.
57. DiRuggiero, J, L. A. Achenbach, S. R. Brown, R. M. Kelly and **F. T. Robb.** 1993 Regulation and processing of the rRNA operon of a hyperthermophilic archaeon, *Pyrococcus furiosus* *FEMS Letters* 111: 159 -164.
58. Ma, K., **F. T. Robb** and M. W. W. Adams. 1994. Purification and characterization of NADP specific alcohol dehydrogenase and NADP specific glutamate dehydrogenase from the hyperthermophilic Archeon *Thermococcus litoralis*. *Appl. and Env. Microbiol.* 60: 562-568 .
59. Klump, H., **F.T. Robb** and M.W.W. Adams. 1994. Life in the pressure cooker: the thermal unfolding of proteins from hyperthermophiles. *Pure and Appl. Chemistry.* 47: 485-489.
60. Brown, J. R., Y. Masuchi, **F. T. Robb** and W. F. Doolittle. 1994. Evolutionary relationships of bacterial and archaeal glutamine synthetase genes. *J. Mol. Evol.* 38: 566-576.
61. Robinson, K. A., **F. T. Robb** and H. J. Schreier. 1994. Isolation of maltose regulated genes from the hyperthermophilic archaeum, *Pyrococcus furiosus*. *Gene.* 151: 173-176.
62. **Robb, F.T.**, J-B. Park, Y. Masuchi and M.W.W. Adams. (1992) Purification and regulation of extremely thermostable glutamate dehydrogenase and glutamine synthetase from the hyperthermophilic archaeobacterium, *Pyrococcus furiosus*. *Biocatalysis at or Above 100⁰C.* (1994) M. W. Adams and R. M. Kelly, eds. ACS Books, Washington DC. pp 74 - 85.
63. Robinson, K. A., **F. T. Robb** and H. J. Schreier. (1995) "Generation of subtraction probes for isolation of specific genes in thermophilic Archaea." in **Robb, F. T.** (Editor in Chief), A. R. Place, S. DasSarma, H. J. Schreier and E. M.

- Fleischmann (eds). *Archaea: A Laboratory Manual*. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY.
64. DiRuggiero, J and **F. T. Robb**. 1995. Purification of RNA from Hyperthermophilic Archaea. in Robb, F. T. (Editor in Chief), A. R. Place, S. DasSarma, H. J. Schreier and E. M. Fleischmann (eds). *Archaea: A Laboratory Manual*. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY.
 65. DiRuggiero J., J.H. Tuttle and **F.T. Robb**. 1995. A rapid method for typing hyperthermophilic Archaea based on restriction fragment length polymorphism of the 16S/23S rRNA spacer region. In *Archaea: A Laboratory Manual*. Robb, F. T. (Editor in Chief). Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY. .
 66. DiRuggiero J., K.M. Borges and **F.T. Robb**. Codon usage of thermophilic Archaea. In *Archaea: A Laboratory Manual*. Robb, F. T. (Editor in Chief). Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY.
 67. Robinson, K. A., **F. T. Robb** and H. J. Schreier. 1995. A gene from the hyperthermophilic Archaeum *Pyrococcus furiosus* displaying homology to prolyl endopeptidase. *Gene*.155: 103-106.
 68. DiRuggiero, J and **F. T. Robb**. 1995. Expression and in vitro assembly of recombinant glutamate dehydrogenase from the hyperthermophilic Archaeon, *Pyrococcus furiosus*. *Appl. Env. Micro*. 61:159-164.
 69. Peak, J. G., T. Ito, **F.T. Robb** and M. J. Peak. 1995. DNA damages produced by exposure of supercoiled plasmid DNA to high and low-LET ionizing radiation: Effects of hydroxyl radical quenchers. *Intl. J. Rad. Biol*. 67: 1-6.
 70. DiRuggiero, J., J H. Tuttle and **F. T. Robb**. 1995. Rapid differentiation between hyperthermophilic Archaea by RFLP analysis of the 16S-23S rRNA spacer region. *Mol. Mar. Biol. Biotech*.4, 123-127.
 71. **Robb, F. T.** (Editor in Chief), A. R. Place, S. DasSarma, H. J. Schreier and E. M. Fleischmann (eds). (1995) *Archaea: A Laboratory Manual*. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY. ISBN 0-87969-397-5.
 72. Britton, K. L., P. J. Baker, K. M. Borges, P. C. Engel, A. Pasquo, D. W. Rice, **F. T. Robb**, R. Scandurra, T. J. Stillman & K. S. Yip. (1995) Insights into thermal stability from a comparison of the glutamate dehydrogenases from *Pyrococcus furiosus* and *Thermococcus litoralis*. *Eur J Biochem*. 2295: 688-695
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Furano, A.V., F.T. Robb, S.M. Robb, and E. D'Ambrosio. (1986) Members of the rat long interspersed repeated DNA family are mobile DNA elements. Abstracts of Meeting on Eukaryotic Transposable Elements. Cold Spring Harbor Laboratories, Cold Spring Harbor, New York

Maharaj, R., F.T. Robb and D.R. Woods. (1986) Cloning and expression of *Vibrio alginolyticus* glutamine synthetase genes in *E. coli*. Abstracts of the 14th International Congress of Microbiology. Manchester, England.

Scholle, R.R., V.E. Coyne, R. Maharaj, G. Blatch, F.T. Robb and D.R. Woods. (September, 1986) Secretion into the culture medium of a *Vibrio alginolyticus* sucrase cloned in *Escherichia coli*. Genetics of Industrial Microorganisms. Split, Yugoslavia.

Thompson, G., G. Brayton, F.T. Robb and R.R. Colwell. (1986) Occurrence and distribution of *Vibrio cholerae* and *Vibrio parahaemolyticus* in a polluted southern African estuary. International Conference in Microbial Ecology. Ljubljana, Yugoslavia.

Seiderer, L.J., R.C. Newell, C.M. Turley and F.T. Robb. (1986). The significance of bacteriolytic activity associated with the gut microflora of the mussel *Mytilus edulis*. International Conference on Microbial Ecology. Ljubljana, Yugoslavia.

Ito, A., F.T. Robb and M.J. Peak. (1987) Base specific damages induced by 4-thiouridine photosensitization with 334 nm radiation in M13 phage. American Society for Photobiology. 15th Annual Meeting, Florida, U.S.A. .

Ito, A., F.T. Robb and M.J. Peak. (1987). Induction of base specific damage in M13 phage DNA by 4-thiouridine photosensitization using 334-nm monochromatic radiation. 30th Annual Meeting of the Japanese Radiation Research Society, Tokyo, Japan .

Deane, S.M., F.T. Robb, S.M. Robb and D.R. Woods. (1988) Characterization of a cloned *Vibrio* SDS resistant exoprotease secreted by *Escherichia coli*. 8th Int. Biotechnology Symposium (Paris) .

Deane, S., F. Robb, S. Robb and D.R. Woods. (1988) Expression and secretion of a novel serine protease from *Vibrio alginolyticus* in *E. coli*. First International Symposium on Marine Molecular Biology, Baltimore.

Robb, F.T., R. Maharaj, E. Rumbak, S.M. Robb and D.R. Woods. (1988) DNA sequence and regulation of a *Vibrio gln* ALG operon cloned in *E. coli*. First International Symposium on Marine Molecular Biology, Baltimore.

Blatch, G.L., F.T. Robb and D.R. Woods. (1988) Expression of a *Vibrio alginolyticus* sucrase cloned in *Bacillus subtilis*. First International Symposium on Marine Molecular Biology, Baltimore.

Skaja, A.K., R.C. Lessick, C.B. Anfinsen, R.M. Kelly and F.T. Robb. (1989) Characterization and thermostability analysis of proteases from the hyperthermophile, *Pyrococcus furiosus*. ACS Annual Meeting, Miami Beach, Florida.

Robb, F.T. (22-24 October, 1989) Molecular genetic studies on the hyperthermophile, *Pyrococcus furiosus*. Archaeobacteria Research Meeting (Office of Naval Research), Williamsburg,

Robb, F.T., S. Brown AND R. M. Kelly. (1990). Molecular cloning studies on the hyperthermophile, *Pyrococcus furiosus*. ICSEB IV, July 1-7, College Park, Maryland USA.

Robb, F. T., E. Rumbak, E.M. Fleischmann and D.R. Woods. (1990). Cloning and characterization of a DNA polymerase gene from the marine bacterium, *Vibrio alginolyticus*. 90th Annual Meeting of the American Society for Microbiology, Los Angeles, CA.

Robb, F.T., J-B Park, and M.W.W. Adams. (1991) Enzymes of nitrogen metabolism in *Pyrococcus furiosus*. American Chemical Society, Annual Meeting, Atlanta, GA.

DiRuggiero, J, Brown, S, Achenbach, L, F. Robb and R. M. Kelly. (1991) Regulation of the rRNA operon of the hyperthermophilic archaeobacterium *Pyrococcus furiosus* by growth rate. 91st Annual Meeting of the American Society for Microbiology, Dallas, Texas.

DiRuggiero, J, S. R. Brown, L. A. Achenbach, R. M. Kelly and F. T. Robb. (1991) Regulation and processing of the rRNA operon of a hyperthermophilic archeon, *Pyrococcus furiosus*. Second International Marine Biotechnology Congress, Baltimore, MD.

Masuchi, Y, Blumentals, C. Chiarantano, R. M. Kelly and F. T. Robb.(1991) Regulation and characterization of the enzymes of nitrogen metabolism in the hyperthermophile, *Pyrococcus furiosus*. Second International Marine Biotechnology Congress, Baltimore, MD.

DiRuggiero, J, F. T. Robb, Y. Masuchi and M.W.W. Adams. (1992) Extremely thermostable enzymes of nitrogen metabolism in hyperthermophilic Archaea. Thermophile Science and Technology, Reykjavik, Iceland.

Achenbach, L, J. DiRuggiero, F. T. Robb, and C. R. Woese. (1992) Highly conserved gene organization and DNA sequence in the rRNA operons of hyperthermophilic Archaea. 92nd Annual Meeting of the American Society for Microbiology, Dallas, TX.

DiRuggiero, J., K. M. Borges, and F. T. Robb. (1993) Cloning and Sequencing of glutamate dehydrogenases from hyperthermophilic Archaea. 93rd Annual Meeting of the American Society for Microbiology, Atlanta, GA..

Masuchi, Y, J. Klapper, M. Kessel, C. Kato, K. Horikoshi, and F. T. Robb. (1993) Isolation of novel hyperthermophiles from the Okinawa Trough. 93rd Annual Meeting of the American Society for Microbiology, Atlanta, GA..

Robinson, K. A., F. T. Robb and H. J. Schreier.(1993) Molecular analysis of genes regulated by maltose in the hyperthermophilic Archeum, *Pyrococcus furiosus*. 93rd Annual Meeting of the American Society for Microbiology, Atlanta, GA..

Masuchi, Y and Robb, F. T. (1993) Cloning and sequencing of the *glnA* from the hyperthermophilic Archaeum, *Pyrococcus furiosus*. 93rd Annual Meeting of the American Society for Microbiology, Atlanta, GA..

DiRuggiero, J. K. M. Borges, M. W. W. Adams and F. T. Robb. (1993) Glutamate dehydrogenases from hyperthermophilic Archaea. Abstr. of "Thermophiles '93" , Hamilton, New Zealand, December 12-15, 1993.

Robb, F. T., K. M. Borges, M. Davis, J. Szasz, K. A. Robinson, H. J. Schreier, C. Fuller, J. W. Chase, and R. Drmanac. (1993). Mapping and sequencing the genome of the Hyperthermophilic Archeon, *Pyrococcus furiosus*. Abstr. of "Thermophiles '93" , Hamilton, New Zealand, December 12-15, 1993.

Robinson, K. A., F. T. Robb and H. J. Schreier (1993) Cloning of maltose-inducible genes from the hyperthermophilic archeum *Pyrococcus furiosus*. Abstr. of "Thermophiles '93" , Hamilton, New Zealand, December 12-15, 1993.

Harwood, V. J. and F. T. Robb (1994) A new copper-induced protein found in *Vibrio alginolyticus* supernatants with unusual silver-staining characteristics. 94th Annual Meeting of the American Society for Microbiology, Las Vegas, NE..

Robinson, K. A., F. T. Robb and H. J. Schreier.(1994) Characterization of the *mlrA* gene in the hyperthermophilic archaeum *Pyrococcus furiosus*. 94th Annual Meeting of the American Society for Microbiology, Las Vegas, NE

Robinson, K.A., D. Bartley, F. T. Robb, and H. J. Schreier (1994) A gene from the hyperthermophilic archaeum *Pyrococcus furiosus* displaying homology to prolyl endopeptidase. 94th Annual Meeting of the American Society for Microbiology, Las Vegas, NE..

Robinson, K.A., F. T. Robb, and H. J. Schreier (1994) Cloning maltose regulated genes from the hyperthermophilic Archeum *Pyrococcus furiosus*. National Science Foundation/National Institute of Standards and Technology sponsored Workshop: Extremozymes: Biocatalysts under Extraordinary Conditions. Washington, D.C.

Robb, F. T, K. M. Borges, S. K. Brummet, J. Szasz, C. Fuller and J. W. Chase.(1994). Genomic Sequencing of the Hyperthermophile, *Pyrococcus furiosus*. GIMS conference, Montreal, Canada. June 28- July 1, 1994.

Brummet, S, K. Borges, F. T. Robb, M. Davis, C. Fuller, and J. W. Chase. (1994) "Genomic Sequencing of the hyperthermophile, *Pyrococcus furiosus*: A progress report." Abstr Genome Sequencing and Analysis Conference VI, Hilton Head, SC Sept 17 -21, 1994.

Robb, F. T. (1995) The *Pyrococcus* genome: A molecular mosaic?" symposium presentation at 95th Annual Meeting of the American Society for Microbiology, Washington, DC.

Maeder, D. M, H. H. Klump, K. Yip, K. L. Britton, D. W. Rice and F. T. Robb (1996) Structural determinants of extreme thermostability in the glutamate dehydrogenases from hyperthermophilic Archaea. International Conference on Protein Folding and Design, Bethesda, MD, April 23-26.

Robb, F. T. Bogert, J. DiRuggiero, Z. Nackerdien, R. M. Weiss, M. J. Peak, J. G. Peak, K. M. Borges and M. Fontecave (1996) Genome Stability At High Temperature. Thermophiles 96. Athens, GA. September 4-9.

PROFESSIONAL ACTIVITIES:

Membership in Scientific Societies and Organizations

South African Society of Microbiology, 1976 - 89. (National Committee member, 1984-85)

South African Biochemical Society 1978 - 89.

American Society for Microbiology.

Royal Society of South Africa.

NIH Alumni Association (1989-2008).

American Association for the Advancement of Science.

Human Genome Organization

Society for Industrial Microbiology

AAAS.

Editorial Service

Editorial Board of "Extremophiles" "Archaea" and "Marine Biotechnology."

Managing Editor, "Extremophiles" 1998-present.

- Editor in Chief for the " Archaea: A Laboratory Manual". Cold Spring Harbor, NY.
- Editor for "Thermophiles: Biology and Technology at High Temperature" Taylor and Francis, Boca Raton, FL

Referee for journals including: Gene, Photochemistry and Photobiology, PNAS, J. Bacteriol., Appl. and Env. Micro., FEMS Letts., Microbial Ecology.

Invited Papers and Seminars (1993-present)

1993 Seminar on "Life in the pressure cooker." to New England Biolabs, Boston, MA.

Seminar on "Gene regulation and enzyme stability in hyperthermophiles" to the Agouron Institute, La Jolla, CA.

Seminar on " Genomic studies with hyperthermophiles" to The Institute for Genomic Research, Gaithersburg, MD, joint seminar with Carl Woese and Gary Olsen.

Invited speaker to the "Thermophiles '93," an international conference held in Hamilton, New Zealand, 12 - 15 December, 1993.

Invited speaker to the "New Zealand/US Thermophile Workshop" held in Waikato, New Zealand, 8-11 December, 1993.

1994. Seminar to the Chesapeake Biological Laboratory, University of Maryland, entitled "The Hyperthermophilic Archaea: Molecular Evidence for a Hot Biosphere."

Seminar at a Greater Baltimore Council-sponsored symposium entitled "Biocatalysis for Business: Leveraging Federal Funding."

1995. Presented lectures in a UNESCO sponsored training course, "Assessing and Managing Environmental Applications of Engineered Organisms", at the Microbiology Resource Center, Cairo, Egypt, and in Fort Hare, South Africa. Seminar at the Experimental Biology Group meeting, Cape Town, South Africa. Seminar at the Dept. of Microbiology, University of Cape Town. Invited speaker at South African Chemical Society National Convention.

1996. Seminar to University of Nebraska Biotechnology Seminar Program, Lincoln, NE. Invited to the "Thirty-Fifth Hanford Symposium on Microbial Genome Research & its Applications," Richland, WA. Invited to speak at the "United States-European Commission Task Force on Marine Biotechnology Research" in Brussels, Belgium. Invited speaker at Society for Industrial Microbiology Annual Meeting, Raleigh, NC.

1997 Seminar at University of Maryland at Baltimore Department of Microbiology & Immunology, Baltimore MD, 20 March, 1997. Seminar at the Biology Dept., University of Massachusetts at Amherst. Seminar at Life Technologies, Inc, Rockville, MD. Seminar at The Institute for Genomic Research, Rockville, MD. Seminar at IBC Conference on "Enzymes from Extreme Environments" San Diego, CA.

1998 Seminar to the Dept of Natural Sciences, North Florida University, Jacksonville, FL Seminar to the Dept. of Microbiology and Molecular Genetics, New Jersey Medical School, Newark, NJ. Seminar to Dept. of Biological Sciences, Univ. of Maryland, Baltimore County, Seminar to Dept of Microbiology, and Genome Center University of Gottingen, Germany Invited speaker "Marine Biotechnology: Applications, commercialisation, cooperations." A workshop in Wilhelmshaven, Germany. July 19-22, 1998. Invited speaker " Biochemistry at 100°C: How are enzymes and their substrates stabilized?" Workshop at Cold Spring Harbor Laboratory, 609 December, 1998.

- 1999 Invited speaker at TIGR Microbial Genomes Conference, Jan 31- Feb 2,
Invited speaker at “World Congress on Enzyme Technologies” San Francisco,
March 10-12, 1999.
Invited speaker to Society for General Microbiology symposium on “Molecular
Biology and Biotechnological Potential of the Archaea.” Edinburgh, UK. 12-16
April, 1999.
Invited speaker, Dept. of Molecular Biology, Harvard Medical School. October
1999.
- 2000 Invited speaker, Dept. of Biological Sciences, University of Albany, NY, February
2000.
Chair, Plenary Session 2 “Genome Projects”, 4th Annual Conference on Microbial
Genomes, Chantilly, VA, February 12-15, 2000
Invited speaker, and Chair, section on Genomic Sequencing, NSF Workshop on
Marine Microbial Genomics, April 19-20.
Invited Speaker, DOE EMSP Workshop, Atlanta, April 25-27.
Chairman, session on Protein Structure and Function, Extremophiles 2000,
Hamburg, Germany. September 3-7, 2000.
Invited Speaker, Small Genomes 2000, Arrowhead, CA September 24-28.
Keynote speaker, International Marine Biotechnology Conference, Townsville,
Australia, September 28-October 5, 2000.
Invited seminars: University of Darmstadt, Germany September 9, 2000.
Dept. of Microbiology, University of Stellenbosch, South Africa, June 21, 2000,
ATCC Extremophiles Workshop, COMB July 24-28,2000.
- 2001 Invited seminars: Temple University, Philadelphia, PA, George Mason University,
Fairfax, VA
Invited speaker at the Microbial Genomes Annual Conference, Gatlinberg,
Tennessee, August 25-27, 2001.
Seminar, Dunstaffnage Marine Laboratory, Scotland. 06/20/2001.
Invited speaker at MARBEC Symposium, Bodega Bay, CA. 11/15-11/18/2001
Invited speaker at Temple University, Philadelphia. 12/5/2001.
- 2002 Invited speaker, Gordon Conference on the “Origin of Life” Ventura, CA. 1/3 –
1/6/2002.
Invited speaker, Bioinformatics Research Center, UMBC. 2/20/2002.
Invited speaker at the International Astrobiology Workshop, St Petersburg, Russia
3/21-3/29/2002.
Invited speaker at the Lilly Symposium on College Teaching, Towson College,
April 12-14, 2002. “The Virtual University”
Session Chair, TIGR/UMBI Minisymposium April 17th, 2002.
Invited speaker, Bacterial Genetics and Ecology Conference, June 21-26,
Bergen, Norway
Seminars: Tokyo University, Korean Ocean Research and Development Institute.
Invited speaker, Genetics of Industrial Microorganisms Conference, July 1-5,
Gyeongju, Korea.
Seminar: CAMBEX, Inc., September 13, Baltimore, MD
Seminar: Genencor, Inc, September 17. Palo Alto, CA
Invited speaker, Extremophiles 2002 Conference, September 20-24th, Naples,
Italy.

Seminar: Instituto di Neurobiologia e Medicina Molecolare, Rome, Italy.
September 27.

- 2006 BIO Conference on Bioprocessing, Toronto, July 3-4, 2006. Workshop presentation
Invited presentation, International Marine Biotechnology Conference, Eilat, Israel.
Invited seminar, Portland State University, IGERT Program, November 1, 2006
Invited lecture, Extremophiles International Conference, Brest, France, September 18-21
ISME Conference, Vienna, Austria. Convened session, presented seminar. August 21-26, 2006.
- 2007 Workshop Organizer, SIM July 29-August 4, Denver, CO. Extremophiles at work.
Invited talk, Biophysical Mechanisms Workshop, Air Force Office of Scientific Research, August 16-19, Arlington, VA.
Plenary lecture, Biomolecular Materials Contractors Meeting, November 4-7, Airlie House, VA
Invited lectures (2) Thermophiles September 19-23, 2007, Bergen, Norway.
- 2008/9 Invited talk, Biophysical Mechanisms Workshop, Air Force Office of Scientific Research, January 9, 2009 Arlington, VA.
Invited lectures (2) Extremophiles International Conference, September 19-23, 2008, Cape Town, South Africa.
Invited lecture, Carnegie Inst. of Washington 1/14/2009. Life in Hot Carbon Monoxide.
Keynote lecture, Thermophiles 2009 International Conference, Beijing. August 15-21, 2009.
Invited seminar, Thermal Biology Institute, Montana State University, Bozeman, Montana. 2/9/2009
- 2010 Invited Talk: Gordon Conference: Iron-Sulfur Proteins (New London, N H) 6/9/2010.
Invited Talk: Better Bugs for Biofuels Workshop. Energy Biosciences Institute, University of California, Berkeley. 6/28/2010.
Plenary Talk: International Marine Biotechnology Conference, Qingdao, China. 10/15/2010.
Invited Talk: New England Biolabs, Ipswich, MA. 11/2/2010.
- 2011 2011 Air Force Office of Scientific Research Workshop, National Harbor, MD. January, 2011.
University at Albany (SUNY) seminar, March 1, 2011.
Biology and Genetics of Archaea, Jeju Island, South Korea. May 8-12, 2011.
Energy Biosciences Institute Retreat Presentation. Berkeley, August 2-5, 2011.
Thermophiles 2011, Big Sky, Montana, Sept 12-17, 2011.
Retirement Symposium for Juergen Wiegel, Athens, GA. September 18-20, 2011.
UMB-JHU Inventors' Forum, Baltimore, October 25, 2011.
Korea-US Symposium, IMET, November 4, 2011.
Air Force Office of Scientific Research Workshop, National Harbor, MD, Dec 2-6, 2011.
2013. Invited Talk: 12th International Thermophiles Conference, University of Regensburg, Germany. Sept 8-13, 2013.
2014. Invited Talk: Habitable Worlds Across Time and Space. Spring Symposium, Space Telescope Science Institute, Baltimore, MD. Apr. 28-May 1, 2014.

Invited Talk: 10th International Congress on Extremophiles, St Petersburg, Russia. Sep 7-11, 2014.
2015. Robb, FT. Universidade Nova de Lisboa, Cell Physiology & NMR Lab, Lisbon, Portugal. Title: "Reconstruction of primary carbon fixation pathways in *Desulforudis audaxviator* by synthetic biology." Seminar. Host: Helena Santos. May 5, 2015.

Rowland S and Robb FT. Deep Carbon Observatory, Extreme Biophysics Workshop. Title: The Archaeal-like Chaperonin From the Deep Subsurface Bacterium, *Candidatus Desulforudis audaxviator*.

2015. Robb, FT. Gordon Research Conference: Archaea: Ecology, Metabolism and Molecular Biology.. Invited speaker and session chair. Sundays River, Maine, USA.
Title: "Archaeal Model Systems for Human Inherited Diseases and Vaccines."
July 26-31, 2015,

Robb FT. Biomanufacturing Workshop, University of Maryland, College Park. College Park, USA. Invited speaker. Title "Extremophile Fermentation" June 1-2, 2015.

Robb, FT. Thermophiles International Conference 2015. Santiago, Chile.
Invited speaker. Title. "Molecular engineering of protein chaperones in the hyperthermophilic *Thermococcus* spp" September 1-7, 2015.

Peer Review

Grant Reviewer for the National Science Foundation, Department of Energy, the Washington, Maryland, Hawaii and California Sea Grant programs.
NIH Study section to review proposals for the National Center for Biotechnology Information Visitors Program, 1991-93.
Review panel member for the Energy Biosciences Program of the Department of Energy, 1990.
Review panel member for Environmental Management Program, DOE. 1996.
Editor in Chief, for the "Archaea: A Laboratory Manual." Cold Spring Harbor Laboratory Press, NY. 1062 pp. 1995.
Review panel for NSF Bioengineering and Biotechnology program, 1997, 1999, 2001
Review panel for NASA Exobiology 2008
Review panel for BARD Israeli-US Cooperative Program 2007, chair
Review panel for Joint Genome Institute Community Sequencing Program, 2007, 2008, 2009

Collaboration

Merck Corporation (South Africa), expert witness in insurance dispute. 1985.
Dynamac Corporation (Rockville, MD) consultant and instructor under contract to the United States Environmental Protection Agency 1992 -1995.
Oceanix Corporation, consultant 1994.
Scientific Advisory Board, ARCHAEATECH, 2000-present, MarBEC, 2000-2003.
Consultant to Fidelity Systems, Inc. 2007.
Scientific Advisory Board, Genome Canada 2010-2014.

Other professional activity

Collaboration with Dr. Douglas Clark, UC Berkeley. Pressure effects on enzyme stability.
Dr. David Rice (University of Sheffield) on structural studies of hyperthermophile enzymes.

Dr. Timothy Fouts, (Profectus Biosciences). Vaccine development with chaperones.

Dr. Alexei Slesarev (Fidelity Systems, Inc.) Protein stabilization and expression.

Dr. Harold Smith (UMBI, CARB) Recombinant protein expression strategies.

Dr. Igor Lednev, SUNY Albany. Chaperone mechanisms of action on amyloid proteins.

Dr. Randy Lewis, Univ. of Wyoming. Optimal assembly of spider silk using extremophile chaperones.

UNIVERSITY AND ACADEMIC ACTIVITY

Courses and Workshops

- 1982 Instructor in two courses, on DNA sequencing methods in Bayreuth, West Germany. One of these courses was "hands-on", the other involved lectures with video demonstration.
- 1982 South African representative (with D. R. Woods) at 12th International Congress of Microbiology, Boston,
- 1982 Multinational Cogene laboratory course held at the University of Cape Town, South Africa.
- 1984-86 Chairman, Biochemical and Genetic Processes Coordinating Group. CSP Benguela Ecology Program..
- 1984 Course leader, SAGENE Dideoxy DNA sequencing course, National Chemical Inst.
- 1987 Attended course on site directed mutagenesis presented by Dr. Tom Kunkel at the University of the Witwatersrand, Johannesburg, South Africa.
- 1987 Biotechnology Training Course in Molecular Genetics, Espada Ranch.
- 1988 Biotechnology Training Programme course on transposon mutagenesis. Biotechnology Training Course, Hermanus, South Africa. Repeat of 1987.
- 1992. Molecular Biology Course Series to scientists at the US EPA.
- 1993. DOE sponsored workshop on "Mapping and Sequencing Small Genomes." Co-organizer with K. Mckenney.
- 1993 Organizing Committee of the Conference, Thermophiles '93: Science and Technology. (Hamilton, New Zealand), 1994.
- 1994 Chairman, Session on "Small Genomes" at Genome Sequencing and Analysis Conference IV, Hilton Head, SC, September 17- 21, 1994.
- 1995 Co-Chairman, with Dr. Stephen Zinder (Cornell University) of a Symposium on "Inferring Phylogeny from Genes other than 16S rRNA", to be held at the annual ASM meeting, Washington, DC, 12 - 17 May, 1995.
- 1996 UMS Chairperson's Workshop, College Park, MD, 25 October, 1996, "Leadership for Evaluation: Chairperson's Workshop"
- 1996 Three invited seminars at Fondation des Treilles, Paris, France, 18-24 July 1996, "The last common ancestor and beyond".
- 1996 Thermophiles '96 meeting, Athens, Georgia, 4-10 September 1996.
Co-organiser and speaker, symposium on "Enzymes from Extreme Environments" at national meeting of the American Chemical Society, Boston, MA..

Organizer and speaker, Workshop on Biotechnology and Geomicrobiology of Thermophiles, Petropavlosk, Kamchatka.
Symposium Co-Organizer and speaker, Symposium on "Seeing the Forest for the Trees, Part 2" ASM Annual Meeting, Los Angeles.
2001. Leader: Introduction to Bioinformatics seminar, MEES 509. Presented at University of Maryland, Baltimore County and by interactive video to Universities of Bergen, Norway and Gothenburg, Sweden.

Graduate and Undergraduate Lecture and Laboratory Courses

1974- 88 Full time teaching of junior and senior level microbiology courses at the rate of 80-100 lectures per year. Course teaching included Introductory Microbiology as well as upper division Microbial Genetics and Biochemistry. Team teaching of research techniques to entering graduate students.
1989 -93 Genetics of Microorganisms. Graduate course (MICB 780) Microbiology Dept., University of Maryland, College Park, USA. Responsible for core genetics curriculum for microbiology graduate students, with lecture and discussion components. A computer aided learning package, entitled the Microbial Genetics Construction Kit (Bioquest) was presented in two of these courses.
1996-2000 Taught gene regulation and Archaeal genomics sections in Bacterial Genetics, (DMIC 635) at University of Maryland, Baltimore.
2001 Taught Genomics, BIOL495/770 at the Univ. of Maryland, Baltimore County.
2005-2007 BIOL494, UMCP Molecular Ecology (Course Leader Jocelyne DiRuggiero).

Committee Participation

1982 - 84 South African National Committee for Microbiology.
1983 - 85 Microbiology Professional Advisory Committee of S. African Council for Natural Scientists
1988 - 89 Co-chairman (with A. Place) of the COMB Seminar Committee.
1989 Chairman, Prokaryotic Molecular Biology Search Committee.
1989 Admitted to Graduate Faculty, UMCP.
Admitted to Interinstitutional Graduate Faculty, USM.
1999-2000 Member, Committee on Intellectual Property, UMBI.
1999 UMBI Presidential Search Committee
1998-2000 Radiation Safety Officer, COMB. Service on EHS Basic Research Subcommittee, Radiation Safety Committee
1999 RAP Search Committee, COMB
1999-2002 Wallenberg Science Steering Committee (Chair)
1999-2000 Chair, UMBI Promotion and Tenure Committee
2000 Chair, MBC Director Search Committee
2000 Vice-chair, UMBI Senate
2005-2008 UMBI Patent Review Board
2005-2007 Chair, COMB Promotion and Tenure Committee
2006-2008 UMBI Research Council
2008-2009 Chair UMBI Senate.
2011-2012 Member, IMET Assistant Professor Search Committee

Student Dissertation Committees.

GRADUATE STUDENTS SUPERVISED

University of Cape Town

Chair of Committee

MS: In addition to students who obtained MS degrees after conventional dissertation research programs(#), MS students(*) indicates outstanding graduates with non-microbiology majors (eg chemical engineering, pathology, agronomy) who retrained in molecular biology.

Mr. K. Mossie (PhD with Harold Varmus, 1985). 1980*

Mr. J. Southern (PhD 1986). 1981*

Ms. M. Ramsay (PhD 1987). 1981*

Mr. H. Zappe (PhD 1987). 1981*

Mr. N. Burchell. 1982*

Ms. C. Hill (PhD 1990).1982*

Ms. G. Thompson. 1984

Ms. S. Bodasing .1984

Mr. N. Young . 1984*

Mr. T. Jacobs. 1984*

Ms. C. Roberts 1986

Ms. E. Rumbak (PhD 1991). 1988*

Ph D

Dr. G. Reid*. 1981

"Studies on the regulation of extracellular collagenase production by *Vibrio alginolyticus*." Deceased 2011

Dr. P. Hare* .1982

"Biochemical studies of proteases from the bacterium, *Vibrio alginolyticus*."

Dr. L. J. Seiderer. 1983.

"The physiology of digestion in marine mussels: A study in environmental adaptation."

Dr. I. Becker. 1984

"Mitochondrial studies of Southern African hake, *Merluccius capensis* and *Merluccius paradoxus*."

Dr. C. Davis. 1985

"Physiological and ecological studies of mannitol utilizing marine bacteria."

Dr. R. Maharaj. 1985

"Genetic and biochemical studies of *Vibrio alginolyticus* glutamine synthetase."

Dr. D. Muir. 1986

"Bacterial populations and their activity in the Benguela upwelling system."

Dr. S. Deane* 1988

Molecular biology studies on the extracellular serine proteases of *Vibrio alginolyticus*."

Dr. R. Scholle* 1988

"Studies on the *Vibrio alginolyticus* sucrose utilization system cloned into *Escherichia coli*."

*Co-adviser with Professor David Woods

Graduate Student Mentoring

University of Maryland Committees

Roaj Suvanasuthi (2008), Kimberley Anderson (2008), Adrienne Kish (2007), Elizabeth McCliment (2007), Jinjun Kan (2006), Jaime Lohr (2003), Elizabeth O'Connor (2003), Jacques Ravel (1999, chair), Ishrat Rahman (1998), Eric Wommack, (1998), James Levin (1997), Kathleen O'Neill (1997), Kelly Robinson (1996), Bonnie Pearson (1994), Kathy Schafer (MS, 1994), Joseph Peters (1994), Ernesto Quintero (1994), Anjali Desai (MS 1993), Pamela Sharpe (1993), Robert Danaher (1993), Juan Shi (1993), Sook Yong Kim (1992), Brian Johnstone (1992), Amy DeCloux (1992), Leslie Palmer (1990), Amala Shenai (1989) William Straube (1989), Charles Somerville (1989), Fan Zhang, 2011-14,
Johns Hopkins University Graduate Committees
Todd Pihl (PhD 1990) and Farhad Moshiri (PhD 1992)

Chair of Committee (University of Maryland)

Saipin Chaiyanan (1998) (co-adviser with Dr R.R. Colwell).

"Molecular studies on highly halotolerant bacteria."

Jacques Ravel. (1999) (Co-adviser with R. T. Hill)

Characterization of giant linear plasmids encoding mercury resistance in *Streptomyces*

Pongpan Laksanalamai (2003)

Functions of small heat shock proteins in hyperthermophilic Archaea

Wirojne Kanopsilathon (2004)

Transposons of hyperthermostable Archaea.

Stephen Techtman (PhD 2009)

A genomic and biochemical characterization of carbon monoxide utilizing thermophilic bacteria.

Verena Starke (PhD 2012) Endolithic Arctic cyanobacteria.

Kim Webb (MS 2012) Radiation resistance of Haloarchaea.

Sara Rowland (Current) Carbon monoxide utilizing bacteria and protein folding evolution.

Other Activities

1988-1996 Negotiated and operated the Promega and Perkin Elmer Freezer Programs for in-house supply of DNA modifying enzymes at COMB, 1989-1997.

1998- 2000 Radiation Safety Officer, COMB

I hereby certify that the contents of this document are thorough and accurate.



Frank T. Robb
May 24, 2016