

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
Follow the sample format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Ross E. Dalbey		POSITION TITLE Professor of Chemistry	
eRA COMMONS USER NAME dalbey			
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i>)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Washington, Seattle, WA	B.S.	1978	Chemistry
Washington State University, Pullman, WA	Ph.D.	1983	Biochemistry
University of California, Los Angeles, CA			Molecular Biology

A. Positions and Honors.**Positions and Employment**

1977	Research Assistant, University of Washington, Seattle, WA
1978-1983	Research Assistant, Washington State University, Pullman WA (Advisor: Dr. Ralph Yount)
1983-1987	Postdoctoral Fellow, University of California, Los Angeles, CA (Advisor: Dr. William Wickner)
1988-1993	Assistant Professor of Chemistry, The Ohio State University, Columbus, OH
1993-1998	Associate Professor of Chemistry, The Ohio State University, Columbus, OH
1999	Professor of Chemistry, The Ohio State University, Columbus, OH

Honors

1988-1991	American Cancer Junior Faculty Research Award
1996-1999	Review panel Member for Ford Foundation Fellowship Programs
1998-2000	Member of the Cell Biology NSF Review Panel
1997-2002	Editorial Board, <i>Journal of Biological Chemistry</i>
2001	Adhoc Reviewer for the Microbial Physiology NIH study section
2005	Adhoc Reviewer of Prokaryotic Cell and Molecular Biology NIH study section
2005	Co-chair of the "Protein Transport Across Cell Membranes" Gordon Conference

B. Selected peer-reviewed publications (in chronological order).

(Selected from 98 peer reviewed publications)

1. Paetzel, M., Dalbey, R. E., and Strynadka, N. C. J. (1998). "Crystal Structure of a Bacterial Signal Peptidase Complex with a β -lactam Inhibitor", *Nature*, **396**, 186-190.
2. Dalbey, R. E. and Kuhn, A. (2000). "Evolutionarily Related Insertion Pathways of Bacterial, Mitochondrial and Thylakoid Membrane Proteins", *Ann. Rev. Cell Develop. Biol.*, **16**, 51-87.
3. Samuelson, J., Chen, M., Jiang, F., Wiedmann, M., Brunner, J., Phillips, G. and Dalbey, R. E. (2000). "YidC is Required for Membrane Protein Insertion in *E. coli*", *Nature*, **406**, 637-641.
4. Yi, L., Jiang, F., Chen, M., Cain, B., Bolhuis, A. and Dalbey, R. E. (2003). "YidC is Strictly Required for Membrane Insertion of Subunit a and c of the F₁F₀ATP Synthase and SecE of the SecYEG Translocase", *Biochemistry*, **42**, 10537-10544.
5. Jiang, F., Chen, M., Yi, L., de Gier, J-W., Kuhn, A. and Dalbey, R. E. (2003). "Defining the Regions of *Escherichia coli* YidC that Contribute to Activity", *J. Biol. Chem.*, **278**, 48965-48972.

6. Kuhn, A., Stuart, R., Henry, R. and Dalbey, R. E. (2003). "The Alb3/Oxa1/YidC Protein Family: Membrane-localized Chaperones Facilitating Membrane Protein Insertion", *Trends in Cell Biol.*, **13**, 510-516.
7. Serek, J., Bauer-Manz, G., Struhalla, G., van den Berg, L., Kiefer, D., Dalbey, R. E. and Kuhn, A. (2004). "Escherichia coli YidC is a Membrane Insertase for Sec-independent Proteins", *EMBO J.*, **23**, 294-301
8. Paetzel, M., Goodall, J. J., Kania, M., Dalbey, R. E. and Page, M. G. P. (2004). "Crystallographic and Biophysical analysis of a bacterial Signal Peptidase Complex with a Lipopeptide-based Inhibitor", *J. Biol. Chem.* **279**, 30781-30790.
9. Yi, L., Celebi, N., Chen, M. and Dalbey, R. E. (2004). "Sec/SRP Requirements and Energetics of Subunits a, b, and c of the Escherichia coli F₁F₀ATP Synthase", *J. Biol. Chem.*, **279**, 39260-39267.
10. Dalbey, R. E. and Kuhn, A. (2004). "YidC Family Members are Involved in the Membrane Insertion, Lateral Integration, Folding and Assembly of Membrane Proteins", *J. Cell Biol.*, **166**, 769-774.
11. Dalbey, R. E. and Chen, M. (2004). "Sec-mediated Membrane Protein Biogenesis", *Bioc. Biophys. Acta.*, **1694**, 37-53.
12. Karla, A., Lively, M.O., Paetzel, M. and Dalbey, R. E. (2005). The Identification of Residues that Control Signal Peptidase Cleavage Fidelity and Substrate Specificity, *J. Biol. Chem.* **280**, 6731-6741.
13. Chen, M., Xie, K., Yuan, J., Yi, L., Facey, S. J., Pradel, M., Wu, L-F., Kuhn, A. and Dalbey R. E. (2005). Involvement of SecDF and YidC in the Membrane Insertion M13 Procoat Mutants. *Biochemistry* **44**, 10741-10749.
14. Celebi, N., Yi, L., Facey, S. J., Kuhn, A. and Dalbey, R. E. (2006). Membrane Biogenesis of Subunit II of Cytochrome bo Oxidase: Contrasting Requirements for Insertion of N- terminal and C-terminal Domains. *J. Mol. Biol.*, **357**, 1428-1436.
15. Xie, K., Kierfer, D., Nagler, G., Dalbey, R. E. and Kuhn, A. (2006). Different Regions of the Nonconserved Large Periplasmic Domain of Escherichia coli YidC Are Involved in the SecF Interaction and Membrane Insertase Activity. *Biochemistry* **45**, 13401-13408.
16. Ekici, O., Karla, A., Paetzel, M., Lively, M. O., Pei, D. and Dalbey, R. E. (2007). Altered -3 Substrate Specificity of Escherichia coli Signal Peptidase I Mutants as Revealed by Screening a Combinatorial Library. *J. Biol. Chem.* **282**, 417-425.
17. Yuan, J., Phillips, G. J., and Dalbey, R. E. (2007). Isolation of Cold-sensitive yidC Mutants Provides Insights into the Substrate Profile on the YidC Insertase and the Importance of Transmembrane 3 in YidC Function. *J. Bacteriol.*, **189**, 8961-8972.
18. Xie, K., Hessa, T., Seppala, S., Rapp, M., von Heijne, G. and Dalbey, R. E. (2007). Features of Transmembrane Segments that Promote the Lateral Release From the Translocase into the Lipid Phase. *Biochemistry*, **46**, 15153-15161.
19. Celebi, N., Dalbey, R. E. and Yuan, J. (2008). Mechanism and Hydrophobic Forces Driving Membrane Protein Insertion of Cytochrome Bo Oxidase. *J. Mol. Biol.*, **375**, 1282-1292.
20. Xie, K. and Dalbey, R. E. (2008). Inserting Proteins in Bacterial Cytoplasmic Membranes using the Sec and YidC Translocases. *Nature Review- Microbiology* **6**, 234-244.
21. Dong, Y., Palmer, S. R., Hasona, A., Nagamori, S., Kaback, H. R., Dalbey, R. E. and Brady, L. J. (2008). Functional Overlap but Lack of Cross-Complementation of Streptococcus mutans and Escherichia coli YidC Orthologs. *J. Bacteriol.* **190**, 2458-2469
22. Wang, P., Shim, E., Cravatt, B., Jacobsen, R., Schoeniger, J., Kim, A. C., Paetzel, M. and Dalbey, R. E. (2008). Escherichia coli Signal Peptide Peptidase A is a Serine-Lysine protease with a Lysine Recruited to the Nonconserved Amino-terminal Domain in the S49 Protease Family. *Biochemistry*, **47**, 6361-6369
23. Dogan Ekici, O. Paetzel, M. and Dalbey, R. E. (2008) Unconventional Serine/Threonine Proteases: Variation on the Catalytic Ser/His/Asp triad Configuration. *Protein Science*, in press
24. Klenner, C., Yuan, J., Dalbey, R. E. and Kuhn, A. (2008). The Pf3 Coat Protein Contacts TM1 and TM3 of YidC during Membrane Protein Biogenesis. *Febs Lett*, in press.

Ongoing Research Support

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Dalbey (PI)

06/01/05-05/31/09

NIH/NIGMS

Inner Membrane Protein Assembly in Bacteria

The goals of the project are to determine the substrate specificity of YidC, identify the substrate binding region of YidC, determine the relationship between YidC and partner proteins, and determine the function of YidC in membrane protein biogenesis.