# *Curriculum Vitae*

**NAME**: Steven Stack Krawiec

## EDUCATION:

Brown University, Providence, RI, A. B., 1963
Yale University, New Haven, CT, Ph. D., 1968

## PROFESSIONAL ASSOCIATIONS:

University of Wisconsin, Madison, WI. N.I.H. postdoctoral trainee, 1968-1969; N.I.H. postdoctoral fellow, 1979-1970.
Lehigh University, Bethlehem, PA. Assistant Professor of Biology, 1970-1976; Associate Professor and Chair of Biology, 1976-1978; on leave, 1978-1979; Associate Professor of Biology, 1979-1982; Professor of Biology, 1982-1985; Professor of Biology and Associate Dean, College of Arts and Sciences, 1985-1987; Professor of Biology, 1987-1991; Professor of Molecular Biology, 1991-1995; Professor of Biological Sciences, 1995-2007; Professor *emeritus*, 2007 - present.
University of Chicago, Chicago, IL. N.S.F. Research Associate, summer 1974.
Universidad Autónoma de Madrid, Madrid, Spain. Senior International Fellow, 1978-1979; Visiting Scientist, 1980.
University of Edinburgh, Edinburgh, Scotland. Visiting Senior Scientist, 1992-1993.

## PROFESSIONAL SOCIETIES:

American Society for Microbiology
The Society of the Sigma Xi
American Association for the Advancement of Science

## TEACHING EXPERIENCE:

I have taught courses at Lehigh pertaining to the following subjects: genetics, microbiology, cell physiology, immunology, biological membranes, structure of nucleic acids and nucleic acid complexes, and microbial ecology, molecular biology of chromosome organization.

## RESEARCH EXPERIENCE:

My graduate education in the laboratory of Dr. Jerome Eisenstadt at Yale University involved pure culture technique, cell fractionation procedures, and techniques for the physical and chemical characterization of nucleic acids.
During my post-doctoral education with Dr. Hans Ris at the University of Wisconsin, I learned fixation, embedding, sectioning, staining, and general microscopic techniques for experimental materials studied with both the light and electron microscopes.
During the summer of 1974 in the laboratories of Drs. Swift and Rabinowitz at the University of Chicago, I learned techniques for preparing heteroduplex molecules and for examining DNA's "spread" on monomolecular films of basic protein.
At Lehigh, I pursued two different lines of research while an assistant professor. The projects pertained to the selective inhibition of mitochondrial transcription and translation, and the distribution of ribonucleotides in the helical and helical regions of ribosomal ribonucleic acids. Subsequent research pertained to limited evolution of bacteria in a chemostat. Bacteria with known structural and regulatory genetic constitutions are maintained under conditions in which a natural carbohydrate is the limiting nutrient. After equilibrium is established, the medium is changed to one that contains an equivalent concentration of the natural substrate plus an excess of an "unnatural" analogue. Strains are selected with new metabolic capabilities. The biochemical and genetic bases of the acquired characteristics are studied. A related project is strain development of microorganisms with some capacity to remove sulfur from complex organic compounds found in coal. A second area of interest is the physical organization of the bacterial genome. Presently, this last interest is being pursued both as a laboratory investigation and an intellectual exercise.
My research at the Autonomous University of Madrid was a demonstration of the orderly, in vitro emergence of DNA from $\phi$29 bacteriophage particles in response to specific biological, chemical, or physical signals.
My research at the University of Edinburgh examined the greater amounts of structural polymorphisms in the *ter* region (as opposed to other regions of the chromosome) of 12 isolates of *Escherichia coli*.
My research experience has been eclectic. This diversity of experience is very useful for those of us at small universities with graduate programs. Furthermore, I have found the breadth very satisfying.

## RESEARCH SUPPORT:

My professional activities have been supported by three grants from the National Institutes of Health, two grants from the National Science Foundation, two contracts from the Department of Energy, a contract from the Pennsylvania Energy Development Authority, a contract from Idaho National Engineering

Laboratory, a grant from the Brown-Hazen Fund of the Research Corporation, a grant from the Society of the Sigma Xi, and four grants from the Office of Research at Lehigh.

## HONORS AND DISTINCTIONS:

1975 Alfred Noble Robinson Prize (Awarded to a Lehigh University faculty member below the rank of associate professor and the age of 35 years for "outstanding service and unusual promise".)
1978-79 Senior International Fellow of the John E. Fogarty International Center.
1985 Donald B. and Dorothy L. Stabler Award ("Recognizes a [Lehigh University] faculty member who demonstrates mastery of his or her field and superior ability in communicating it to others")

## COMMUNITY SERVICE:

Member of the Moravian Academy Board of Trustees, 1985-1992;1993-present

## CAREER GOALS:

My career goals are to be an accomplished teacher and an effective researcher. I admire both the attributes required to fulfill these ambitions and the consequences of realizing them. Both goals require creative talents, well-developed analytical skills, a thoroughness of knowledge, a willingness to accept new thoughts, the ability to communicate facts and concepts, and honesty. The immediate consequence of these activities is that information worthy of attention is shared with students and colleagues. The more enduring (yet abstract) consequences are a contribution to the general store of knowledge and a refinement or even an expansion of our concepts of the natural world.

## PUBLICATIONS:
## Papers and Proceedings:

Krawiec, S. and Eisenstadt, J. M. 1970. Ribonucleic Acids from the Mitochondria of Bleached *Euglena gracilis*. I. Isolation of Mitochondria and Extraction of Nucleic Acids. Biochimica et Biophysica Acta. **217**:120-131.

Krawiec, S. and Eisenstadt, J. M. 1970. Ribonucleic Acids from the Mitochondria of Bleached *Euglena gracilis*. II. Characterization of Highly Polymeric Ribonucleic Acids. Biochimica et Biophysica Acta. **21**7:132-141.

Rohatgi, K. and Krawiec, S. 1973. Some Effects of Chloramphenicol and Ethidium Bromide on *Tetrahymena pyriformis*. Journal of Protozoology. **20**:425-430.

Kay, E., Rohatgi, K. and Krawiec, S. 1974. Morphometric Studies of Mitochondria in *Tetrahymena pyriformis* Exposed to Chloramphenicol or Ethidium Bromide. Journal of Protozoology. **21**:606-612.

Hulbert, M. and Krawiec, S. 1977. Cometabolism: A Critique. Journal of Theoretical Biology. **69**:287-291.

Mohr, P. and Krawiec, S. 1980. Temperature Characteristics and Arrhenius Plots for Nominal Psychrophiles, Mesophiles and Thermophiles. Journal of General Microbiology. **121:**311-317.

Krawiec, S., Jimenez, F., Garcia, J. A., Villaneueva, N., Sogo, J. M., and Salas, M. 1981. The Orderly *in vitro* Emergence of DNA from ϕ29 Particles. Virology**. 111**:440-454.

Thompson, L. W. and Krawiec, S. 1983. Acquisitive Evolution of Ribitol Dehydrogenase in *Klebsiella pneumoniae*. Journal of Bacteriology. **154**:1027-1031.

Krawiec, S. 1985. Concept of a Bacterial Species. International Journal of Systematic Bacteriology. **35**:217-220.

Krawiec, S. 1986. Some Experimental Observations and Speculations about Bacterial Desulfurization of Organic Components in Coal. Proceedings of Biological Treatment of Coals Workshop, Sheladia Associates, 52-64.

Riley, M. and Krawiec, S. 1987. Genome Organization. In J. L. Ingraham, B. Magasanik, M. Schaechter, K. B. Low, F. C. Neidhardt, H. E. Umbarger (eds.) *Escherichia coli* and *Salmonella typhimurium*: Cellular and Molecular Biology. The American Society for Microbiology, Washington D. C. p. 967- 981.

Krawiec, S. 1988. Detection and Initial Characterization of Bacteria with the Ability to Desulfurize Dibenzothiophene to *o,o'*-Biphenol. Proceedings of the Fifth Annual International Pittsburgh Coal Conference, 263-274.

Krawiec, S. 1988. Detection, Isolation, and Initial Characterization of Bacteria with the Ability to Desulfurize Dibenzothiophene to *o,o*'-Biphenol. Proceedings of Bioprocessing of Coals Workshop-III, Sheladia Associates, 189-199.

Krawiec, S. 1990. Bacterial Desulfurization of Thiophenes: Techniques and some Speculations regarding the Biochemical and Genetic Bases. Developments in Industrial Microbiology. **31**:103-114.

Krawiec, S. 1990. Transformations of Dibenzothiophene by Axenic Cultures of *Sulfolobus acidocaldarius* and other Bacteria: A critique. in Biotechnology Applied to Fossil Fuels, Donald L. Wise (ed.), Marcel Dekker, Inc. New York, pp 569-601.

Krawiec, S. and Riley, M. 1990. The Organization of the Bacterial Chromosome. Microbiological Reviews. **54**:502-539.

Krawiec, S., Wang, P., McQueney, P. A., and Dutt, D. L. 1991. The Desulfurization of Dibenzothiophene by Bacteria: Accomplishments and Challenges. Proceedings of the Second International Symposium on the Biological Processing of Coal. pp. 5-47 - 5-62.

Wang, P. Humphrey, A. R., and Krawiec, S. 1993. Isolation and Kinetic Analyses of Bacterial Strains Which Desulfurize Model Compounds Characteristic of Coal. In. B. K. Parekh and J. G. Groppo (eds.) Coal Science and Technology, Vol 21.Processing and Utilization of High Sulfur Coal V. Elsevier, pp. 331-343.

Wang, P. and Krawiec, S. 1994. Desulfurization of Dibenzothiophene to 2-hydroxybiphenyl by Some Newly Isolated Bacterial Strains. Archives of Microbiology. **161**:266-271.

Wang, P. and Krawiec, S. 1996. Kinetic Analyses of Desulfurization of Dibenzothiophene) by *Rhodococcus erythropolis* in Batch and Fed-Batch Cultures. Applied and Environmental Microbiology. **62**:1670-1675.

Wang, P., Humphrey, A. E., and Krawiec, S. 1996. Kinetic Analyses of Desulfurization of Dibenzothiophene by *Rhodococcus erythropolis* in Continuous Culture. Applied and Environmental Microbiology. **62**:3066-3068.

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**Abstracts:**

Krawiec, S. and Eisenstadt, J. M. 1968. High Molecular Weight Ribonucleic Acids from Mitochondria of Bleached Euglena. Bacteriological Proceedings, 131.

Rohatgi, K. and Krawiec, S. 1972. Chloramphenicol- and Ethidium Induced Alterations of Growth, Respiration, and Cell Morphology. Abstracts of the Annual Meeting of the American Society for Microbiology, 147.

Davenport, L. W. and Krawiec, S. 1974. Mitochondrial Transcription in the Obligately-Fermentative Water Mold, *Blastocladia ramosa*. Abstracts of the Annual Meeting of the American Society for Microbiology, 174.

Krawiec, S., Salsgiver, W. and Friend, P. 1974. Induction of Filamentous Growth of *Mucor genevensis* in Anaerobic Conditions by Inhibitors of Mitochondrial Genetic Expression. Abstracts of the Annual Meeting of the American Society for Microbiology, 142.

Thompson, L.W. and Krawiec, S. 1980. An Investigation of Acquisitive Evolution Using Ribitol Dehydrogenase in *Klebsiella pneumoniae*. Abstracts of the Annual Meeting of the American Society for Microbiology, 137.

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Blount-Fronfield, D., Dutt, D., Gottlund, K., Krawiec, S., and Montennecourt, B. S. 1986. Correlation of Dibenzothiophene Disappearance and Growth of *Sulfolobus acidocaldarius*. Abstracts of the Annual Meeting of the American Society for Microbiology, p. 286.

Krawiec, S. 1987. Regulation and Substrate Toxicity during Acquisitive Evolution. Gordon Research Conference on "Population Biology and Evolution of Microorganisms."

Dutt, D., Saadi, P., Ciatti, S., and Krawiec S. 1988. Isolation of Bacteria with the Ability to Desulfurize Dibenzothiophene to *o,o'*-Biphenol. Abstracts of the Annual Meeting of the American Society for Microbiology, p. 225.

Krawiec, S. and Kay, E. J. 1988. Regions in the *Escherichia coli* Genome Devoid of Loci Preclude a Meaningful Assessment of Gene Distribution. American Society for Microbiology Conference on Organization of the Bacterial Chromosome.

Krawiec, S., and Kay, E. J. 1988. "Log Normal" Distribution of Loci on the *E. coli* Chromosome Does Not Arise from "Log Normal" Distribution of Gene Sizes. XVIth International Congress of Genetics. Toronto, Canada.

Dutt, D. and Krawiec, S. 1989. R68.45-Induced Transfer of a Desulfurization Phenotype from Soil Isolates to *Pseudomonas* Recipients. Abstracts of the Annual Meeting of the American Society for Microbiology, p. 331.
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Wang, P. and Krawiec, S. 1992. Analysis of Monohydroxybiphenyl Production from Dibenzothiophene by New Desulfurizing Bacteria. Abstracts of the General Meeting of the American Society for Microbiology.

Dutt, D. L. and Krawiec, S. 1994. Chromosome Sizes for Two *Thiobacillus* spp. Abstracts of the General Meeting of the American Society for Microbiology. p. xxx.

Davies, T. and Krawiec, S. 1996. Genomic Orgaination in *Rhodococcus* spp. Abstracts of the General Meeting of the American Society for Microbiology. p. 495.

Davies, T. and Krawiec, S. 1997. Common Genomic Organizations of *soxA/B* in *Rhodococcus* spp. Abstracts of the General Meeting of the American Society for Microbiology. P. xxx.

Dutt, D. L., Kraft, A., and Krawiec, S. 2000. Genomic Organization in *Rhodococcus erythropolis* D-1. Abstracts of the General Meeting of the American Society for Microbiology. P. yyy.

Dutt, D. L. and Krawiec, S. 2002. Phylogenetic Relationships Among 15 Rhodococcus Strains based Upon 16S rDNA Sequences. Abstracts of the General Meeting of the American Society for Microbiology. P. yyy.

Dutt, D. L. and Krawiec, S. 2002. Analysis of the five Unique 16S-23S Internal transcribed Spacer Regions of Four *Rhodococcus erythropolis* strains. Abstracts of the General Meeting of the American Society for Microbiology. P. yyy.

## PERSONAL DATA:

Date of birth -- November 4, 1941
Family --

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| wife: | Margaret (née Macpherson) | |
| | | B. A. 1963, University of California-Berkeley |
| | | M. S. 1965, Yale University |
| son: | Matthew | B. A. 1988, St. John's College |
| | | M. A. 1990, University of Texas (Austin) |
| | | Employed in theater management at Charlotte Wilcox Associates |
| daughter: | Rebecca | B. A. 1990, Brown University |
| | | M. A. 1992, Yale University |
| | | M. Phil. 1994, Yale University |
| | | Ph. D. 1996, Yale University |
| | | Employed as Assistant Professor of Religion at Canisius College |