

## Curriculum Vitae

### KENNETH G. KOWALSKI

44569 Larchwood Drive  
Northville, MI 48168  
(248) 449-1739  
ken.kowalski@a2pg.com

#### EXPERIENCE

- **July 2006 – December 2007** Pfizer, Inc., Ann Arbor, MI  
*Senior Director, Pharmacometrics – Statistical Research & Consulting Center.* Responsibilities include promotion of best practices in population modeling globally within Pfizer R&D. Co-author of a white paper on model-based drug development initiatives promoted globally within Pfizer R&D. Provide mentorship to several statisticians in pharmacometrics applications. Provide strategic project consultations on decision criteria and study design using model-based drug development strategies.
- **January 2003 – July 2006** Pfizer, Inc., Ann Arbor, MI  
*Director, Pharmacometrics – Statistical Research & Consulting Center.* Prepared ~200 page document on statistical best practices in population modeling. Document serves as reference guide and training manual for modelers globally within Pfizer R&D. Provided mentorship to statisticians in pharmacometrics applications. Provided modeling and simulation support for SC-75416, to resolve a formulation issue and change strategic direction of the program. Results of independent study confirmed the model predictions allowing the project to move forward without delays. Received a Pfizer R&D Achievement Award for this groundbreaking work.
- **September 2001 – January 2003** Pfizer, Inc., Ann Arbor, MI  
*Director, Pharmacometrics – Clinical Statistics.* Provided statistical consultation to modelers in performing population PK/PD analyses. Provided population modeling support for the Pregabalin NDA. Began promotion of statistical best practices in population modeling.
- **1996 – September 2001** Pharmacia (Searle), Skokie, IL  
*Research Fellow – Clinical Statistics.* Responsibilities included design, modeling and reporting of all population PK and PK/PD studies. Provided technical supervision for a full-time in-house contract statistician. Negotiated a pediatric study design for a marketed drug with the FDA, performed the population analysis, and prepared report for regulatory submission. Six months patent exclusivity was granted for the drug, resulting in an estimated \$60M in revenue that would have been lost to generic competition. Research interests included clinical trial simulation for the design of population PK studies and efficient methods for covariate model building. Promoted to scientific track (Fellow Program) in recognition of expertise in statistics and population modeling.

- **1994 – 1996** G.D. Searle & Co., Skokie, IL  
*Consulting Statistician II – Clinical Statistics.* Responsibilities included population PK/PD modeling of compounds in Phase 1 and 2 development to assist dose selection for Phase 3. Provided technical supervision of a full time in-house contract statistician. Research interests included development of a semi-compartment solution to the effect-compartment PK/PD model.
- **1993 – 1994** G.D. Searle & Co., Skokie, IL  
*Senior Pharmacometrician – Clinical Pharmacokinetics.* Participated as a Clinical PK representative on a project team for a fibrinogen antagonist compound. Provided population PK/PD modeling support to assist dose level and regimen selection. The PK/PD modeling was used to resolve safety issues to end a ‘clinical hold’ for the project.
- **1988 – 1993** G.D. Searle & Co., Skokie, IL  
*Consulting Statistician I – Clinical Statistics.* Provided PK modeling support for preclinical and Phase 1 clinical studies. Responsible for bring NONMEM in-house. Research interests included development of an algorithm to automate estimation of the terminal half-life.
- **1982 – 1988** G.D. Searle & Co., Skokie, IL  
*Senior Statistician/Statistician – Preclinical Statistics.* Provided statistical support in various preclinical R&D applications. Statistical applications included experimental design, response surface methodology, and nonlinear regression. Developed a multi-response estimation method for kinetic modeling of drug stability data involving parent drug and degradation products. Research interests included evaluation of biased regression methods in the development of quantitative structure activity relationships (QSAR models).
- **1983 – 1984** Elgin Community College  
*Mathematics Instructor – Mathematics Department.* Taught evening classes in algebra, finite mathematics, and trigonometry.
- **1980 – 1981** Northern Illinois University  
*Teaching Assistant – Mathematics Department.* Teaching assistant for calculus and elementary statistics classes.

## EDUCATION

- **1980 – 1982** Northern Illinois University, DeKalb, IL  
M.S. degree in Applied Probability and Statistics
- **1978 – 1980** Northern Illinois University, DeKalb, IL  
B.S. degree in Mathematics with emphasis in Probability and Statistics
- **1976 – 1978** Elgin Community College, Elgin, IL  
A.S. degree in Mathematics

**PROFESSIONAL ACTIVITIES/AFFILIATIONS**

- **2004 – present**  
Editorial board member for the *Journal of PK & PD*
- **1991 – 1996**  
Secretary, Population Modeling Workgroup, Biopharmaceutical Section of ASA
- **Current memberships:**  
American Statistical Association (ASA)  
American Society of Clinical Pharmacology and Therapeutics (ASCPT)  
American Association of Pharmaceutical Sciences (AAPS)

**AWARDS**

- 2006 PGRD Achievement Award, Pfizer, Inc., Ann Arbor, MI
- 1984 Special Incentive Award, G.D. Searle & Co., Skokie, IL
- 1982 Certificate of Merit Award, Northern Illinois University, DeKalb, IL
- 1977 Mathematics Achievement Award, Elgin Community College, Elgin, IL

**PUBLICATIONS**

1. **Kowalski, K.G.**, Olson, S., Remmers, A., and Hutmacher, M.M. “Modeling and Simulation to Support Dose Selection and Clinical Development of SC-75416, a Selective COX-2 Inhibitor for the Treatment of Acute and Chronic Pain.” *Clinical Pharmacology & Therapeutics* (in press).
2. Hutmacher, M.M., Krishnaswami, S., and **Kowalski, K.G.** “Concentration-Response for the Efficacy of a JAK3 Inhibitor Administered to Rheumatoid Arthritis Patients.” *J of Pharmacokinetics and Pharmacodynamics* (in press).
3. Lalone, R.L., **Kowalski, K.G.**, et. al. “Model-Based Drug Development.” *Clinical Pharmacology & Therapeutics* 2007;82:21-32.
4. **Kowalski, K.G.**, Ewy, W., Hutmacher, M.M., Miller, R., and Krishnaswami, S. “Model-Based Drug Development: A New Paradigm for Efficient Drug Development.” *Biopharmaceutical Report* 2007;15:2-22.
5. Hermann, D., Miller, R., Hutmacher, M.M., Ewy, W., and **Kowalski, K.G.** “Design and Analysis of Clinical Exposure - Response Trials.” Chapter in *Pharmacometrics: The Science of Quantitative Pharmacology*, Ette E. and Williams P. (eds.), John Wiley & Sons, Inc. (2006).
6. Hutmacher, M.M., Mukherjee, D., **Kowalski, K.G.**, and Jordan, D.C., “Collapsing Mechanistic Models, Maintaining Their Interpretations, and the Implications on Substantive Inference: an Application to Dose Selection for a Proof of Concept of a Selective Irreversible Antagonist.” *J. of Pharmacokinetics and Pharmacodynamics* .2005;32:501-520.
7. Miller, R., Ewy, W., Corrigan, B.W., Ouellet, D., Hermann, D., **Kowalski, K.G.**, Lockwood, P., Koup, J.R., Donevan, S., El-Kattan, A., Li, C.S.W., Werth, J.L., Feltner, D.E., and Lalonde, R.L. “How Modeling and Simulation Have Enhanced Decision Making in New Drug Development.” *J. of Pharmacokinetics and Pharmacodynamics* 2005;32:185-197.

8. Miller, R., Hermann, D., Ewy, W., and **Kowalski, K.G.**, "The Strategic Role and Application of Pharmacokinetic/Pharmacodynamic Modeling in Drug Development." Chapter in *Pharmacokinetics in Drug Development: Clinical Study Design and Analysis*, Bonate, P. and Howard, D. (eds.), AAPS Press (2004).
9. **Kowalski, K.G.**, McFadyen, L., Hutmacher, M.M., Frame, B., and Miller, R. (2003). "A Two-Part Mixture Model for Longitudinal Adverse Event Severity Data." *J. of Pharmacokinetics and Pharmacodynamics*, 30:315-336.
10. Hutmacher, M.M. and **Kowalski, K.G.**, "Evaluation of Random Sparse Sampling Designs for a Population Pharmacokinetic Study: Assessment of Power and Bias using Simulation." Chapter in *Simulation for Designing Clinical Trials*, Ko, H.C. and Duffull, S. (eds.), Marcel Dekker, NY (2002).
11. **Kowalski, K.G.** and Hutmacher, M.M. "Efficient Screening of Covariates in Population Models using Wald's Approximation to the Likelihood Ratio Test." *J. of Pharmacokinetics and Pharmacodynamics* 2001;28:253-275.
12. **Kowalski, K.G.** and Hutmacher, M.M. "Design Evaluation for a Population Pharmacokinetic Study Using Clinical Trial Simulations: A Case Study." *Statistics in Medicine*, 2001;20:75-91.
13. **Kowalski, K.G.** and Karim, A. "A Semi-Compartmental Modeling Approach for Pharmacodynamic Data Assessment." *J. of Pharmacokinetics and Biopharmaceutics*, 1995;23:307-323.
14. Yuh, L., Beal, S., Davidian, M., Harrison, F., Hester, A., **Kowalski, K.**, Vonesh, E. and Wolfinger, R. "Population Pharmacokinetic/Pharmacodynamic Methodology and Applications: A Bibliography." *Biometrics*, 1994;50:566-575.
15. **Kowalski, K.G.** "An Algorithm for Estimating the Terminal Half-Life in Pharmacokinetic Studies." *Computer Methods and Programs in Biomedicine*, 1994;42:119-126.
16. Fischl, M.A., Resnick, L., Coombs, R., Kremer, A.B., Pottage, J.C., Fass, R.J., Fife, K.H., Powderly, W.G., Collier, A.C., Aspinal, R.L., Smith, S.L., **Kowalski, K.G.**, and Wallemark, C-B. "The Safety and Efficacy of Combination N-Butyl-Deoxynojirimycin (SC-48334) and Zidovudine in Patients with HIV-1 Infection and 200-500 CD4 Cells/mm<sup>3</sup>." *J. of Acquired Immune Deficiency Syndromes*, 1994;7:139-147.
17. Cook, C.S., Ames, G.B., Smith, M.E., **Kowalski, K.G.**, and Karim, A. "Absorption and Distribution of a New Antiarrhythmic Agent Bidisomide in Man." *Pharmaceutical Research*, 1993;10:1675-1682.
18. Page, R.L., Wharton, J.M., Wilkinson, W.E., Friedman, I.M., Claypool, W.D., Karim, A., **Kowalski, K.G.**, McDonald, S.J., Gardiner, P. and Pritchett, E.L.C. "Bidisomide (SC-40230), A new Antiarrhythmic Agent: Initial Study of Tolerability and Pharmacokinetics." *Clin. Pharmacol. and Therap.*, 1992;51:371-378.
19. Cook, C.S., Hauswald, C.L., Grahn, A.Y., **Kowalski, K.G.**, Karim, A., Koch, R., Schoenhard, G.L. "Suitability of the Dog as an Animal Model for Evaluating Theophylline Absorption and Food Effects from Different Formulations." *International Journal of Pharmaceutics*, 1990;60:125-132.
20. Cook, C.S., Gwilt, P.R., **Kowalski, K.G.**, Gupta, S., Oppermann, J. and Karim, A. "Pharmacokinetics of Disopyramide in the Dog, Importance of Mono-N-Dealkylated

- Metabolite Kinetics in Assessing Pharmacokinetic Modeling of the Parent Drug.” *Drug Metabolism and Dispositions*, 1990;18:42-49.
21. **Kowalski, K.G.** “On the Predictive Performance of Biased Regression Methods and Multiple Linear Regression.” *Chemometrics and Intelligent Laboratory Systems*, 1990;9:177-184.
  22. Karim, A., Rozek, L.F., Smith, M.E., and **Kowalski, K.G.** “Effects of Food and Antacid on Oral Absorption of Misoprostol, A Synthetic Prostaglandin E1 Analog.” *J of Clinical Pharmacology*, 1989;29:439-443.
  23. **Kowalski, K.**, Beno, M., Bergstrom, C. and Gaud, H. “The Application of Multiresponse Estimation to Drug Stability Studies.” *Drug Deve. And Ind. Pharm.*, 1987;13:2823-2838.

### INVITED LECTURES AND PRESENTATIONS

1. **Kowalski, K.G.** and Hutmacher, M.M. “Evaluation of a Random Sparse Sampling Design: An Assessment of Power and Bias Using Simulation.” Invited presentation given at the PAGE Annual Meeting, Verona, Italy, June 12-13-2003.
2. **Kowalski, K.G.** “A Two-Stage Mixture Model for Longitudinal Adverse Event Severity Data.” Invited lecture given to the Office of Clinical Pharmacology and Biopharmaceutics (OCPB) and the Office of Biostatistics, FDA, Rockville, MD, February 7, 2003.
3. **Kowalski, K.G.** “Screening Covariate Models Using Wald’s Approximation: An Evaluation of the WAM Algorithm on Several Data Sets.” Invited lecture given to the Biometrics and Pharmacometrics Departments at FDA, Rockville, MD, July 9, 2001.
4. **Kowalski, K.G.** “Challenges in the Design and Analysis of Population Pharmacokinetic Studies in Drug Development.” Invited lecture given at the Northern Illinois University workshop on longitudinal data analysis, November 6-7, 1997.
5. **Kowalski, K.G.** “An Overview of Statistical Methods for Pharmacokinetic/ Pharmacodynamic Modeling in Drug Development Studies.” Invited lecture given at the Northern Illinois University Statistics Colloquium, September 29, 1995.
6. **Kowalski, K.G.** “What do Clinical Pharmacology Statisticians Do? Results from a Survey.” Invited presentation given at the ASCPT Biostatistics Special Interest Group Meeting, San Antonio, TX, March 19, 1999.
7. **Kowalski, K.G.** “Clinical Trials Model Building Practices: Industry Examples.” Invited presentation given at the CDDS Workshop on Modeling and Simulation Best Practices, Washington, DC, February 4, 1999.
8. **Kowalski, K.G.** “Importance of PK/PD Modeling in Clinical Drug Development.” Invited presentation given at the PhRMA Biostatistics Subsection Meeting, Washington, DC, October 24, 1994.
9. Bittman, R.M. and **Kowalski, K.G.** “Practical Advances of Statistical Advances in Stability Prediction.” Invited presentation given at the PhRMA Biostatistics Subsection Meeting, San Diego, CA, September 29, 1987.
10. **Kowalski, K.G.** “Medium Optimization for Microbial Product Formation.” Invited presentation given at the ASA Northeastern Illinois Chapter Meeting, June 6, 1984.

**POSTERS, ABSTRACTS AND PRESENTATIONS**

1. **Kowalski, K.G.**, Olson, S. and Remmers, A. “A Modeling and Simulation Case Study: Impact on an Early Clinical Development Program.” Poster/podium presentation given at the AAPS Annual Meeting, San Antonio, TX, November 1, 2006.
2. **Kowalski, K.G.**, Olson, S. and Remmers, A. “A Modeling and Simulation Case Study: Impact on an Early Clinical Development Program.” Oral presentation given at the PAGE Annual Meeting, Brugge Belgium, June 14-16, 2006.
3. **Kowalski, K.G.**, Olson, S. and Remmers, A. “A Modeling and Simulation Case Study: Impact on an Early Clinical Development Program.” Oral presentation given at the MUF PADA Annual Meeting, Ann Arbor, MI, May 2-3, 2006.
4. **Kowalski, K.G.** “Modeling and Simulation in Early Clinical Development: A Case Study.” Oral presentation given at the MUF PADA Annual Meeting, Indianapolis, IN, April 28-29, 2005.
5. Chapel, S., **Kowalski, K.G.**, Hutmacher, M., Wesche, D., and Bockbrader, H. “Pregabalin Exposure-Response Analysis in Patients with Postherpetic Neuralgia.” Poster presentation given at the ASCPT Annual Meeting, Orlando, FL, March 2-5, 2005.
6. **Kowalski, K.G.**, Wang, W., and Hermann, D. “WAM (Wald’s Approximation Method): A User-Friendly Software Program for Efficient Covariate Model Building.” Poster presentation given at the ASCPT Annual Meeting, Miami Beach, FL, March 24-27, 2004.
7. **Kowalski, K.G.** and McFadyen, L. “Nonlinear Mixed Effects Modeling of Adverse Event Severity Scores.” Oral presentation given at the MBSW Annual Meeting, Muncie, IN, May 19-21, 2003.
8. **Kowalski, K.G.**, and McFadyen L. “Modeling AE Severity Scores when the Distribution of Interindividual Random Effects is Degenerative.” Poster/podium presentation given at the AAPS Annual Meeting, Toronto, CA, November 10-14, 2002.
9. **Kowalski, K.G.**, Burger, P., Miller, R., Bockbrader, H., Poole, R. M., and Corrigan, B. W. “Exposure Response Relationship of Pregabalin: A Novel Therapy for the Treatment of Neuropathic Pain.” Poster presentation at the 10<sup>th</sup> World Congress on Pain, San Diego, CA, August 17-22, 2002.
10. **Kowalski, K.G.**, and McFadyen L. “Modeling AE Severity Scores when the Incidence of AE’s is Low.” Oral presentation given at the MUF PADA Annual Meeting, Indianapolis, IN, May 2-3, 2002.
11. **Kowalski, K.G.** “Efficient Screening of Covariates in Population Models Using Wald’s Approximation to the Likelihood Ratio Test.” Oral presentation given at the MBSW Annual Meeting, Muncie, IN, May 21-23, 2001.
12. **Kowalski, K.G.** “Screening Covariate Models Using Wald’s Approximation: An Evaluation of the WAM Algorithm on Several Data Sets.” Oral presentation given at the MUF PADA Annual Meeting, Cincinnati, OH, May 3-4, 2001.
13. **Kowalski, K.G.** and Hutmacher, M.M., “Efficient Screening of Covariates in Population Models Using Wald’s Approximation to the Likelihood Ratio Test.” Poster presentation given at the ASCPT Annual Meeting, Orlando, FL, March 6-10, 2001.

14. **Kowalski, K.G.** and Hutmacher, M.M. "Efficient Screening of Covariates in Population Models Using Wald's Approximation to the Likelihood Ratio Test." Oral presentation given at the MUFpada Annual Meeting, Ann Arbor, MI, May 19, 2000.
15. **Kowalski, K.G.** and Hutmacher, M.M. "Design Evaluation for a Population Pharmacokinetic Study Using Clinical Trial Simulations: A Case Study." Poster presentation given at the ASCPT Annual Meeting, March, 2000.
16. **Kowalski, K.G.** "Design of a Population Pharmacokinetic Study Using Clinical Trial Simulations." Oral presentation given at the 35<sup>th</sup> Annual DIA Meeting, Baltimore, MD, June 30, 1999.
17. **Kowalski, K.G.** "Population Pharmacodynamic Models for Analgesia Data." Oral presentation given at the 5<sup>th</sup> Annual Biopharmaceutical Applied Statistics Symposium, Hilton Head, SC, December 8, 1998.
18. **Kowalski, K.G.** "Characterizing the Distribution of Steady-State Plasma Levels: A Population Pharmacokinetic Analysis." Poster presentation given at the Intermediate NONMEM Workshop, San Francisco, CA, May 30, 1992.
19. **Kowalski, K.G.** "On the Predictive Performance of Biased Regression Methods and Multiple Linear Regression." Oral presentation given at the DIA Workshop on Preclinical Computer and Statistical Applications, Baltimore, MD, February 26, 1990.
20. Lamb, S.C., **Kowalski, K.G.**, Evans, T.M. and Carr, B.T. "Phenylalanine Production Rate Optimization Using a Three-Parameter Logistic Equation to Model Phenylalanine Concentration-Time Curves." Poster presentation given at the ACS Annual Meeting, Miami, FL, September 15, 1989.
21. **Kowalski, K.G.** "Statistical Methods in Modeling and Analysis of Drug Stability." Oral presentation given at the DIA Workshop on Preclinical Statistics Applications, Philadelphia, PA, November 14, 1988.
22. Stolzenbach, J., **Kowalski, K.G.**, von Doehren, P.J. and Schoenhard, G.L., "A Physiologically Based Pharmacokinetic Model for oral Administration of Controlled Release Misoprostol." Oral presentation given at the Greater Chicago Pharmacology Chapter of ASPET, Chicago, IL, March 8, 1988.
23. **Kowalski, K.G.** "The Application of Multi-Response Estimation to Drug Stability Studies." Oral presentation given at the MBSW Annual Meeting, Muncie, IN, May 26, 1987.
24. **Kowalski, K.G.** "A Mixture Design Application in the Optimization of a Chemical Extraction Process." Presentation given at the MBSW Annual Meeting, Muncie, IN, May 28, 1986.
25. **Kowalski, K.G.** "Estimating a Discrete Lag for a Pair of Autoregressive Series." Presentation given at the Joint Statistical Meetings, Cincinnati, OH, August 17, 1982.