

# CURRICULUM VITAE

## Name

Rod G. Gullberg

## Family

Married to Karen C. Gullberg  
Three Children (Scott, Luke, Rebekah)

## Position

Breath Test Section Research Analyst

## Employer

Washington State Patrol  
Breath Test Section  
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## Education

<u>Degree</u>	<u>Major(s)</u>	<u>University</u>	<u>---</u>	<u>Year</u>
Bachelor of Science	Animal Science	WA State U	-	1971
Masters	Public Admin.	Eastern WA U	-	1978
Master of Science	Biostatistics	Univ of Wash	-	2003

## Professional Training

Breathalyzer Operator	-	1974
Breathalyzer Technician	-	1977
Breathalyzer Instructor	-	1978
Smith and Wesson Academy Training	-	1979
Verax Systems Inc. Factory Training	-	1985
Supervision For Breath Tests		
Indiana University	-	1986

## Professional Associations

Northwest Association of Forensic Scientists  
National Safety Council Committee on Alcohol and Other Drugs  
American Academy of Forensic Sciences - Toxicology Section

## Awards

Robert F. Borckenstein Award - February 2006

## Publications

- Gullberg, Rodney G., "Variation in Blood Alcohol Concentration Following the Last Drink". Journal of Police Science and Administration, Vol. 10, No. 3, Sept. 1982, pp. 289-296.

2. Gullberg, R. G., "Duplicate Breath Testing: Statistical vs. Forensic Significance of Differences", Journal of Forensic Science Society, Vol. 27, 1987, pp. 315-319.
3. Gullberg, R. G., "Statistical Evaluation of Truncated Breath-Alcohol Test Measurements", Journal of Forensic Sciences, Vol. 33, No. 2, March 1988, pp. 507-510.
4. Gullberg, R. G., "Duplicate Breath Testing: Some Statistical Analyses", Forensic Science International, Vol. 37, 1988, pp. 205-213.
5. Gullberg, R. G., "Developing a New Computerized Breath Testing Program: Washington's Experience With the BAC Verifier Datamaster", Journal of Police Science and Administration, Vol. 16, No. 1, March 1988, pp. 1-13.
6. Gullberg, R. G., "Applying a Data Acquisition System to the Analysis of Breath Alcohol Profiles", Journal of the Forensic Science Society, Vol. 29, 1989, pp. 397-405.
7. Gullberg, R. G., "Breath Alcohol Test Precision: An In vivo vs. In vitro Evaluation", Forensic Science International, Vol. 43, 1989, pp. 247-255.
8. Gullberg, R. G., "An Application of Probability Theory to a Group of Breath and Blood Alcohol Data", Journal of Forensic Sciences, Vol. 35 No. 6, Nov. 1990, pp. 1342-1352.
9. Gullberg, R. G., "Differences Between Roadside and Subsequent Evidential Breath Alcohol Results and Their Forensic Significance", Journal of Studies on Alcohol, Vol. 52, No. 4, 1991, pp. 311-317.
10. Gullberg, R. G., "The Mathematical Analysis of Breath Alcohol Profiles Generated During Breath Exhalation", Journal of Analytical Toxicology, Vol. 14, No. 6, 1990, pp. 358-367.
11. Gullberg, R. G., "Using a Weighted Mean to Compute the Values of Simulator Solution Standards", Letter to the Editor, Journal of Analytical Toxicology, Vol. 14, May/June 1990, pp. 196-198.
12. Gullberg, R. G., "Duplicate Breath Alcohol Analysis: Some Further Parameters for Evaluation", Medicine, Science and the Law, Vol. 31 No. 3, 1991, pp. 239-248.
13. Gullberg, R. G., "Predicting the Second Breath Alcohol Measurement From the First: An Application of Regression Analysis", Letter to the Editor, Journal of Forensic Sciences, Vol. 36 No. 1, Jan. 1991, pp. 10-14.
14. Gullberg, R. G., "Distribution of the Third Digit in Breath Alcohol Analysis", Letter to the Editor, Journal of Forensic Sciences, Vol. 36 No. 4, July 1991, pp. 976-978.
15. Gullberg, R. G., "Estimating the Second Breath Alcohol

Measurement from the First: A Model Refinement", Letter to the Editor, Journal of Forensic Sciences, Vol. 36 No. 3, May 1991, pp. 634-637.

16. Speck, P. R., McElroy, A. J. and Gullberg, R. G., "The Effect of Breath Alcohol Simulator Solution Volume on Measurement Results", Journal of Analytical Toxicology, Vol.15 No. 6, November/December 1991, pp. 332-335.
17. Gullberg, R. G., "The Application of Control Charts in Breath Alcohol Measurement Systems", Medicine, Science and The Law, Vol.33 No.1, 1993, pp. 33-40.
18. Gullberg, R. G., "Statistical Evaluation and Reporting of Blood Alcohol/Breath Ratio Distribution Data", Letter to the Editor, Journal of Analytical Toxicology, Vol. 15 No. 6, November/December 1991, pp. 343-344.
19. Gullberg, R. G. and McElroy, A. J., "Identifying Components of Variability in Breath Alcohol Analysis", Journal of Analytical Toxicology, Letter to the Editor, Vol. 16 No. 3, May/June 1992, pp. 208-209.
20. Gullberg, R. G., "The Elimination Rate of Mouth Alcohol: Mathematical Modelling and Forensic Implications in Breath Alcohol Analysis", Journal of Forensic Sciences, Vol.37 No.5, Sept. 1992, pp. 1363-1372.
21. Gullberg, R. G., "Evaluating the Variability of Duplicate Breath Alcohol Analyses as a Function of Subject Age", Medicine, Science and The Law, Vol.33 No.2, 1993, pp. 110-114.
22. Gullberg, R. G., "The Relationship Between Duplicate Reproducibility and Concentration in Breath Alcohol Testing Programs", Letter to the Editor, Journal of Analytical Toxicology, Vol. 16, July/August 1992, pp. 272-273.
23. Gullberg, R. G., "Determining Total Method Level of Detection and Level of Quantitation for Breath Alcohol Analysis Programs", Letter to the Editor, Journal of Forensic Sciences, Vol. 37 No. 5, Sept. 1992, pp. 1208-1210.
24. Gullberg, R. G. and McElroy, A. J., "Comparing Roadside with Subsequent Breath Alcohol Analyses and Their Relevance to the Issue of Retrograde Extrapolation", Forensic Science International, Vol.57, 1992, pp. 193-201.
25. Gullberg, R. G., "The Use of Statistical Methods in the Journal of Forensic Sciences", Letter to the Editor, Journal of Forensic Sciences, Vol.38 No.1, Jan. 1993, pp. 9-10.
26. Gullberg, R. G., "Employing Simulated Data to Illustrate an Important Cause of the 'Steeppling' Effect in Breath Alcohol Analysis", Medicine, Science and the Law, Vol.34 No.4, 1994, pp. 321-323.

27. Gullberg, R. G., "A Concern Associated With Single Breath Alcohol Analysis for Forensic Purposes", Letter to the Editor, Journal of Forensic Sciences, Vol.38 No.6, Nov. 1993, pp. 1263-1265.
28. Gullberg, R.G., "Considering Measurement Variability When Performing Retrograde Extrapolation of Breath Alcohol Results", Letter To The Editor, Journal of Analytical Toxicology, Vol.18, March/April 1994, pp. 126-127.
29. Gullberg, R.G., "The Frequency of Apparent Acetone in a Group of Breath Alcohol Data: Statistical Treatment and Forensic Implications", Forensic Science International, Vol.67, 1994, pp. 65-72.
30. Gullberg, R.G. and Jones, A.W., "Guidelines for Estimating the Amount of Alcohol Consumed From a Single Measurement of Blood Alcohol Concentration: Re-Evaluation of Widmark's Equation", Forensic Science International, Vol 69, 1994, pp. 119-130.
31. Logan, B.K., Gullberg, R.G., and Elenbaas, J.K., "Isopropanol Interference with Breath Alcohol Analysis: A Case Report", Journal of Forensic Sciences, Vol.39 No.4, July 1994, pp. 1107-1111.
32. Gullberg, R.G., "Repeatability of Replicate Breath Alcohol Measurements Collected in Short Time Intervals", Science and Justice, Vol.1, 1995, pp. 5-9.
33. Gullberg, R.G. and McElroy, A.J., "Author's Response", Letter To The Editor, Forensic Science International, Vol.73, 1995, pp. 213-215.
34. Lubkin, S.R., Gullberg, R.G., Logan, B.K., Maini, P.K., and Murray, J.D., "Simple Versus Sophisticated Models of Breath Alcohol Exhalation Profiles", Alcohol and Alcoholism, Vol.31 No.1, 1996, pp. 61-67.
35. Gullberg, R.G., Andersson, L. and Jones, A.W., "Comparison of Evidential Breath Alcohol Testing and Drinking Driving Demographics in Sweden and the State of Washington", Journal of Traffic Medicine, Vol.25 No.3-4, 1997, pp. 77-87.
36. Gullberg, R.G. and Logan, B.K., "Reproducibility of Within-Subject Breath Alcohol Analyses", Medicine, Science and the Law, Vol.38 No.2, 1998, pp. 157-162.
37. Gullberg, R.G., "Methodology and Quality Assurance in Forensic Breath Alcohol Analysis", Forensic Science Review, Vol.12 No.1,2, January 2000, pp. 49-68.
38. Gullberg, R.G., "Alcohol: Breath", Encyclopedia of Forensic Sciences, London: Academic Press Ltd., 2000.
39. Gullberg, R.G., "Statistical Considerations for Readers and Authors of the Forensic Science Literature", Forensic Science

- Review, Vol.13 No.1, Jan. 2001, pp. 65-76.
40. Gullberg, R.G., "Breath Alcohol Analysis in One Subject With Gastroesophageal Reflux Disease", Case Report, Journal of Forensic Sciences, Vol.46 No.6, 2001, pp. 1498-1503.
  41. Gullberg, R.G., "Breath Alcohol Measurement Variability Associated With Different Instrumentation and Protocols", Forensic Science International, Vol.131, 2003, pp. 30-35.
  42. Logan, B.K. and Gullberg, R.G., Alcohol, Drugs and Driving , in Clarkes Analysis of Drugs and Poisons, 3<sup>rd</sup> ed., Moffat, A.C., Osselton, M.D. and Widdop, B., editors, London: Pharmaceutical Press, 2004., pp. 53-67.
  43. Gullberg, R.G., Alcohol: Breath Alcohol Analysis , Encyclopedia of Forensic and Legal Medicine, Jason Payne-James, ed., Burlington, MA: Elsevier and Academic Press, 2005, pp. 21-29.
  44. Gullberg, R.G., Factors Associated with Breath Test Refusals in Drunken Driving Arrests , Science and Justice, Vol.45 No.2, 2005, pp. 85-92.
  45. Gullberg, R.G., Common Legal Challenges and Responses in Forensic Breath Alcohol Determination , Forensic Science Review, Vol.16, 2004, pp. 91-101.
  46. Gullberg, Rod G., Letter To The Editor, Can. Soc. Forensic Sci. J., Vol.38, 2005, pp. 119-121.
  47. Gullberg, R.G. and Logan, B.K., Results of a Proposed Breath Alcohol Proficiency Test Program , Journal of Forensic Sciences, Vol.51 No.1, 2006, pp. 168-172.
  48. Gullberg, R.G., Determining the Air/Water Partition Coefficient to Employ When Calibrating Forensic Breath Alcohol Test Instruments , Can. Soc. Forensic Sci. J., Vol.38 No.4, 2005, pp. 205-212.
  49. Gullberg, R.G., Determining an Appropriate Standard For Duplicate Breath Test Agreement", Can. Soc. Forensic Sci. J., Vol.39 No.1, 2006, pp. 15-24.
  50. Gullberg, R.G., "Professional and Ethical Considerations in Forensic Breath Alcohol Testing Programs", Journal of the Alcohol Testing Alliance, Vol.5 No.1, April 2006, pp. 22-30.
  51. Gullberg, R.G., "Estimating the Measurement Uncertainty in Forensic Breath Alcohol Analysis", Accreditation and Quality Assurance: Journal for Quality, Comparability and Reliability in

Chemical Measurement, Vol.11 No.11, Nov. 2006, pp. 562-568.

52. Gullberg, R.G., Estimating the Uncertainty Associated with Widmarks Equation as Commonly Applied in Forensic Toxicology , Forensic Science International, in print.

#### **Papers/Posters Presented**

1. Paper - "Washington's New Proposed Breath Testing Program With The BAC Verifier Datamaster". Northwest Association of Forensic Sciences, Spring 1985, Seattle, Washington.
2. Poster - "Computerized Breath Testing: Washington's Breath Test Program with The BAC Verifier Datamaster". An International Symposium on Driving Under the Influence of Alcohol and/or Drugs, March 1986, FBI Academy, Quantico, Virginia.
3. Paper - "The Mathematical Analysis of Breath Alcohol Profiles Generated as Functions of Time During Breath Expiration". Northwest Association of Forensic Sciences, October 1988, Portland, Oregon.
4. Poster - "The Mathematical Analysis of Breath Alcohol Profiles Generated During Breath Exhalation". Eleventh Intl. Conf. on Alcohol, Drugs and Traffic Safety, October 1989, Chicago, Illinois.
5. Paper - "Within-Subject Multiple Breath Alcohol Analysis in Short Time Intervals". Northwest Association of Forensic Scientists, November 1990, Seattle, Washington.
6. Poster - "Within-Subject Repeatability of Breath Alcohol Exhalation Profile Parameters". American Academy of Forensic Sciences, February 1991, Anaheim, California.
7. Paper - "The Elimination Rate of Mouth Alcohol and Its Implication in Forensic Breath Alcohol Analysis". Northwest Association of Forensic Scientists, October 1991, Coeur d'Alene, Idaho.
8. Poster - "Estimating the Variance in Roadside (Single) and Subsequent Evidential (Duplicate) Breath Alcohol Analyses and Their Forensic Implications". American Academy of Forensic Sciences, February 1992, New Orleans, Louisiana.
9. Poster - "Predicting the Probability of Breath Alcohol Instrument Malfunction Through Application of the Poisson Distribution". American Academy of Forensic Sciences, February 1992, New Orleans, Louisiana.
10. Paper - "Statistical Methodology Employed in the Journal of Forensic Sciences". American Academy of Forensic Sciences, February 1992, New Orleans, Louisiana.
11. Poster - "Comparison of Roadside Breath Alcohol Analysis

- With Subsequent Analysis in Relating the Evidentiary Results Back to the Time of Driving". International Symposium on Forensic Toxicology, June 1992, FBI Academy, Quantico, Virginia.
12. Paper - "Evaluating the "Steepling Effect" in Breath Alcohol Analysis by Means of Simulated Data". Northwest Association of Forensic Sciences, October 1992, Portland, Oregon.
  13. Poster - "Employing Simulated Data to Evaluate the "Steepling Effect" in Breath Alcohol Analysis". American Academy of Forensic Sciences, February 1993, Boston, Mass.
  14. Poster - "Using Control Charts to Evaluate the Effectiveness of Simulator Recycle Tubing in Breath Alcohol Instruments", American Academy of Forensic Sciences, February 1993, Boston, Mass.
  15. Poster - "Statistical Treatment of Duplicate Breath Alcohol Analyses", American Academy of Forensic Sciences, February 1994, San Antonio, Texas.
  16. Poster - "Design and Statistical Considerations in Comparing Blood and Breath Alcohol", American Academy of Forensic Sciences, February 1994, San Antonio, Texas.
  17. Paper - "Computational Uncertainty Associated with Retrograde Extrapolation of Breath Alcohol Results", Northwest Association of Forensic Sciences, November 1994, Vancouver, B.C.
  18. Poster - "Application of Confidence Intervals to Breath Alcohol Analysis", American Academy of Forensic Sciences, February 1995, Seattle, Washington.
  19. Paper - "Statistical Analysis of Duplicate Blood Alcohol Data From a Forensic Toxicology Laboratory", American Academy of Forensic Sciences, February 1999, Orlando, Florida.
  20. Paper - "Reporting Blood and Breath Alcohol Results: Statistical Aspects", International Association of Forensic Sciences, Breath Alcohol Workshop, Los Angeles, California, August 1999.
  21. Paper - "Methodology and Quality Assurance in Forensic Breath Alcohol Analysis", The Robert F. Borckenstein International Symposium on Alcohol and Forensic Science, Taipei, Taiwan, December 1999.
  22. Paper - "The Inadequacy of Instrumental Mouth Alcohol Detection Systems in Forensic Breath Alcohol Measurement", Northwest Association of Forensic Sciences, Seattle, Washington, October 2000.

23. Poster - "Factors Associated with Breath Test Refusal in Drunk Driving Cases", American Academy of Forensic Sciences, Seattle, Washington, February 2001.
24. Paper - "Common DUI Defense Challenges in Forensic Alcohol Analysis", California Association of Toxicologists, Santa Rosa, California, August 2003.
25. Paper - "Using Breath Alcohol Data From an Enforcement Perspective", Lifesavers Conference, San Diego, CA, March 2004.
26. Paper - Forensic Breath Alcohol Measurement: The Mathematical Perspective , Texas Criminal Defense Lawyers Association, Arlington, Texas, March 2004.
27. Paper - Determining the Total Uncertainty in Forensic Breath Alcohol Measurement , Northwest Association of Forensic Sciences, Seattle, WA, November 2005.
28. Paper - Statistical Applications in Forensic Breath Alcohol Analysis , California Association of Criminalists, Temecula, CA, October 2006.

Manuscripts Peer Reviewed For The Following Journals

Journal of Forensic Sciences  
Journal of Analytical Toxicology  
Forensic Science International  
ALCOHOLISM: Clinical and Experimental Research  
Forensic Science Review  
Canadian Society of Forensic Science Journal

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