

CV

Personal profile

- More than 10 years experience in academia and industry as statistics line manager and statistician, often with substantial methodological contribution
- Particular experience in early and late drug development with safety and efficacy biomarkers, incl. representation at regulatory scientific advice meetings

Career summary

- Since 2014 Affiliated Professor, Department of mathematical statistics and actuarial science, University of the Free State, Bloemfontein, South Africa
- Since 2013 Principal Statistician, Leicester Clinical Trials Unit, University of Leicester
- 2011 - 2012 Head of Statistics and Modelling Group, Diabetes Trials Unit, University of Oxford
- 2007 - 2011 Team leader Phase I/IIa biostatistics, Boehringer Ingelheim Pharma, Biberach, Germany
- 2002 - 2007 Biostatistician, Boehringer Ingelheim Pharma, Biberach, Germany
- 2000 - 2002 Actuary (Non-life reinsurance), GE Frankona Re, München

Academic consultancies

- Since 2011 Independent DSMB statistician for the SCIPI trial in paediatric population
University of Liverpool
- 2012 Statistical consultancy for development of trial protocol for Roche Pharma
- 2012 Presentation of study results at ECE conference for Boehringer Ingelheim

Academic qualifications

- 2013 Associate Fellowship of the Higher Education Academy, UK
- 2011 Certificate MQ-1 "Teaching for Medical Students", University of Ulm
- 2001 PhD in Pharmacometrics, Martin-Luther-University Halle-Wittenberg
- Including a 3-month research stay at the Department of Pharmacy, University of Toronto (Canada).
- 1996 Diploma in mathematics (MSc equivalent) at the Martin-Luther-University Halle-Wittenberg (Germany)
- Including one academic study year at the Department of Mathematical Statistics at the University of Stockholm (Sweden)
 - Minor in biochemistry and computer science

Publications

- Author of >35 papers in peer-reviewed journals, >10 of them as first or last author
- More than 70 abstracts to clinical and statistical conferences
- More than 25 invited presentations as international and national conferences

Scientific awards

2008	Poster price "Biometrics" of the German statistical society GMDS
2003	Young research awards of the German statistical society GMDS
1986	Award in scientific students contest for applied computer programs
2010	DIA accepted student poster session abstract (PhD student: C. Kossow)
2008	DIA accepted student poster session abstract (PhD student: P. Glomb)
2006	GMDS accepted student presentation abstract (MSc student: J. Deinhard)

Teaching experiences

2013 - today	Contributions to modules for MSc Applied Health Research and MSc Medical Statistics, University of Leicester
2008 - today	Lecturer for full term courses „Biostatistics“ and „Clinical trials“ for MSc in molecular medicine, University of Ulm
2010	Lecturer for graduate (PhD) student course "Statistics for Pharmacometrics", University of Halle-Wittenberg
2005 - 2011	Lecturer for an introductory course in epidemiology, "Landesgesundheitsamt Baden-Württemberg" (including scientific publication on teaching methods)
1995 - 2007	Lecturer for various levels of „Swedish“ at different adults schools

Leicester, 01-APR-2014

Original publications in "Peer reviewed journals" as first or last author

Statistical

1. **Ring A**, Morris TBS, Koytchev R, Hohl K, Schall R. Indirect bioequivalence assessment using network meta-analyses. *Eur J Clin Pharmacol. Accepted.*
2. **Ring A**, Yu LM, Schall R, Loke YK. A systematic review of the ECG effects of moxifloxacin in thorough QT trials. *Final Draft.*
3. Glomb P, **Ring A**. Delayed effects in the „exposure-response“ analysis of clinical QTc-Studies. *J Biopharm Stat.*2012. 22(2):387-400.
4. Schall R, **Ring, A**. Mixed model for data from thorough QT studies. Part 1: Assessment of marginal QT prolongation. *Pharm Stat.* 2011. 10(3):265-76. doi: 10.1002/pst.463.
5. Schall R, Endrenyi, L. **Ring, A**. Residuals and outliers in replicate design crossover studies. *J Biopharm Stat.* 2010. 20(4):835-49.
6. **Ring A**, Walter B, LARBalestier A, Chanter D. An efficient crossover design for thorough QT studies. *GMS Med Inform Biom Epidemiol.* 2010. 6(1):Doc05.
7. Schall R, **Ring, A**. Statistical Characterization of QT Prolongation. *J Biopharm Stat,* 2010. 20(3); 543 – 562.
8. **Ring A**. Statistical models for heart rate correction of the QT interval. *Statist Med.* 2010. 29 (7-8), 786–796.
9. **Ring A**, Tothfalusi L, Endrenyi L, Weiss M. Sensitivity of empirical metrics of rate of absorption in bioequivalence studies. *Pharm Res.* 2000. 17(5):583-8.

Clinical

1. **Ring A**, Brand T, Macha S, Breithaupt-Groegler K, Walter B, Broedl U. The sodium glucose cotransporter 2 inhibitor empagliflozin does not prolong QT interval in a thorough QT (TQT) study. *Cardiovasc. Diabetol.* 2013, 12:70. doi:10.1186/1475-2840-12-70.
2. **Ring A**, Rathgen K, Feifel U, Stangier, Reilly, P, Friedman J. Dabigatran does not prolong the QT interval with suprathreshold exposure – a thorough QT study. *Clin Drug Invest.* 2013;33(5):333-42. doi: 10.1007/s40261-013-0058-0.2
3. **Ring A**, Port A, Graefe-Mody EU, Revollo I, Iovino M, Dugi KA. The DPP-4 inhibitor Linagliptin does not prolong the QT interval at therapeutic and suprathreshold doses. *Br J Clin Pharmacol.* 2011, 72(1):39-50. doi: 10.1111/j.1365-2125.2011.03931.x.
4. **Ring A**, Ring C, Lutz D. Einsatz der Zeitschrift „Hygiene und Medizin“ in der Weiterbildung zur Hygienefachkraft. (en: Use of the journal „Hygiene und Medizin“ for the training to the degree of “infection control nurse”). *Hyg Med.* 2010. 35 (11): 412-420.
5. Weiss M, **Ring A**. Interpretation of general measures of distribution kinetics in terms of a mammillary compartmental model. *J Pharm Sci.* 1997. 86(12):1491-3.

Original publications in peer reviewed journals

1. Krause J, Agarwal S, Bodicoat D, Ring A, Shepherd D, Rogers S, Wensing M, Baker R. (2014) Evaluation of a tailored intervention to improve management of overweight and obesity in primary care; study protocol of a cluster randomised controlled trial. *Trials*, 15:82. doi:10.1186/1745-6215-15-82.
2. Metzmann K, Schnell D, Jungnik A, **Ring A**, Theodor R, Hohl K, Meinicke T, Friedrich C. (2014) Food and tablet-dissolution characteristics do not affect the bioavailability of linagliptin fixed dose combination with metformin: evidence from two randomized trials. *Int J Clin Pharmacol Ther* *Accepted*.
3. Buschke S, **Ring A**, Friedrich C, Metzmann K, Meinicke T. (2014) Linagliptin fixed-dose combination with metformin is bioequivalent to co-administration of linagliptin and metformin as individual tablets. *Int J Clin Pharmacol Ther* *Accepted*.
4. Friedrich C, Jungnik A, Retlich S, **Ring A**, Meinicke, T. (2014) Bioequivalence of Linagliptin 5 mg once daily and 2.5 mg twice daily: Pharmacokinetics and pharmacodynamics in an open-label crossover trial. *Drug Research*. doi: 10.1055/s-0033-1357144.
5. Green JB, Bethel MA, Paul SK, **Ring A**, Kaufman KD, Shapiro DR, Califf RM, Holman, RR. (2013) Rationale, design, and organization of a randomized, controlled Trial Evaluating Cardiovascular Outcomes with Sitagliptin (TECOS) in patients with type 2 diabetes and established cardiovascular disease. *Am Heart J*. 166(6):983-989.e7
Doi:/10.1016/j.ahj.2013.09.003
6. Bethel MA, Price H, Sourij H, White S, Coleman R, **Ring A**, Kennedy I, Tucker L, Holman R. (2013) Evaluation of a Self-administered Oral Glucose Tolerance Test. *Diabetes Care*. 36(6): 1483-1488, doi: 10.2337/dc12-0643
7. Friedrich C, Shi X, Zeng P, **Ring A**, Woerle HJ, Patel S (2012). Pharmacokinetics of single and multiple oral doses of 5 mg linagliptin in healthy Chinese volunteers. *Int J Clin Pharmacol Ther* 50(12):889-895. doi: 10.5414/CP201802
8. Rauch T, Graefe-Mody U, **Ring A**, Deacon CF, Holst JJ, Woerle HJ, Dugi KA and Heise T. (2012) Linagliptin increases incretin levels, lowers glucagon, and rapidly improves glycaemic control in patients with Type 2 diabetes. *Diabetes Ther*. 3(1):10.
doi: 10.1007/s13300-012-0010-y.
9. Graefe-Mody U, Rose P, Retlich S, **Ring A**, Waldhauser L, Cinca R, Woerle HJ. (2012) Pharmacokinetics of linagliptin in subjects with hepatic impairment. *Br J Clin Pharmacol*. 74(1):75-85. doi: 10.1111/j.1365-2125.2012.04173.x.
10. Graefe-Mody U, Friedrich C, Port A, **Ring A**, Retlich S, Heise T, Halabi A, Woerle HJ. (2012) Author response to letter from Snyder et al. regarding manuscript entitled 'Effect of renal impairment on the pharmacokinetics of the dipeptidyl peptidase-4 inhibitor, linagliptin' by Graefe-Mody et al. *Diabetes Obes Metab*. 14(7):671-2.
doi: 10.1111/j.1463-1326.2012.01597.x.
11. Graefe-Mody U, Friedrich C, Port A, **Ring A**, Retlich S, Heise T, Halabi A, Woerle HJ. (2011) Effect of renal impairment on the pharmacokinetics of the dipeptidyl peptidase-4 inhibitor linagliptin. *Diabetes Obes Metab*. 13(10):939-46.
doi: 10.1111/j.1463-1326.2011.01458.x.

12. Graefe-Mody EU, Brand T, **Ring A**, Withopf B, Stangier J, Iovino M, Woerle HJ. (2011) Effect of linagliptin on the pharmacokinetics and pharmacodynamics of warfarin in healthy volunteers. *Int J Clin Pharmacol Ther.* 49(5):300-10.
13. Friedrich C, Port A, **Ring A**, Graefe-Mody U, Giessmann T, Iovino M, Woerle HJ. (2011) Effect of multiple oral doses of linagliptin on the steady-state pharmacokinetics of a combination oral contraceptive in healthy female adults: an open-label, two-period, fixed-sequence, multiple-dose study. *Clin Drug Investig.* 31(9):643-53. doi: 10.2165/11590240-000000000-00000.
14. Graefe-Mody U, Giessmann T, **Ring A**, Iovino M, Woerle HJ. (2011) A randomized, open-label, crossover study evaluating the effect of food on the relative bioavailability of linagliptin in healthy subjects. *Clin Ther.* 33(8):1096-103. doi: 10.1016/j.clinthera.2011.07.005.
15. Forst T, Uhlig-Laske B, **Ring A**, Ritzhaupt A, Graefe-Mody U, Dugi KA. (2011) The novel, potent and selective DPP-4 inhibitor BI 1356 significantly lowers HbA1c after 4 weeks of treatment in patients with type 2 diabetes mellitus. *Diabetes Obes Metab.* 13(6): 542-50.
16. Forst T, Uhlig-Laske B, **Ring A**, Graefe-Mody U, Friedrich C, Herbach K, Woerle HJ, Dugi KA (2010). Linagliptin (BI 1356), a potent and selective DPP-4 inhibitor, is safe and efficacious in combination with metformin in patients with inadequately controlled Type 2 diabetes. *Diabet Med.* 27(12):1409-19. doi: 10.1111/j.1464-5491.2010.03131.x.
17. Graefe-Mody U, Rose P, **Ring A**, Zander K, Iovino M, Woerle HJ. (2011). Assessment of the pharmacokinetic interaction between the novel DPP-4 inhibitor Linagliptin and a sulfonylurea, glyburide, in healthy subjects. *Drug Metab Pharmacokinet.* 2011;26(2):123-9.
18. Friedrich C, **Ring A**, Brand T, Sennewald R, Graefe-Mody EU, Woerle HJ. (2011) Evaluation of the pharmacokinetic interaction after multiple oral doses of linagliptin and digoxin in healthy volunteers. *Eur J Drug Metab Pharmacokinet.* 36(1):17-24. DOI: 10.1007/s13318-011-0028-y
19. Retlich S, Duval V, **Ring A**, Staab A, Hüttner S, Jungnik A, Jaehde U, Dugi KA, Graefe-Mody U. (2010) Pharmacokinetics and pharmacodynamics of single rising intravenous doses (0.5 mg–10 mg) and determination of absolute bioavailability of the dipeptidyl peptidase-4 inhibitor Linagliptin (BI 1356) in healthy male subjects. *Clin Pharmacokinet;* 49 (12): 829-840.
20. Graefe-Mody U, Huettner S, Stähle H, **Ring A**, Dugi KA. (2010) Effect of linagliptin (BI 1356) on the steady-state pharmacokinetics of simvastatin. *Int J Clin Pharmacol Ther.* 48(6):367-74.
21. Graefe-Mody EU, Jungnik A, **Ring A**, Woerle HJ, Dugi KA (2010). Evaluation of the pharmacokinetic interaction between the dipeptidyl peptidase-4 inhibitor linagliptin and pioglitazone in healthy volunteers. *Int J Clin Pharmacol Ther.* 2010; 48(10):652-61.
22. Graefe-Mody EU, Padula S, **Ring A**, Withopf B, Dugi KA (2009) Evaluation of the potential for steady-state pharmacokinetic and pharmacodynamic interactions between the DPP-4 inhibitor linagliptin and metformin in healthy subjects. *Curr Med Res Opin.* 25(8):1963-72.
23. Heise T, Graefe-Mody EU, Hüttner S, **Ring A**, Trommeshauser D, Dugi KA.(2009) Pharmacokinetics, pharmacodynamics and tolerability of multiple oral doses of linagliptin, a dipeptidyl peptidase-4 inhibitor in male type 2 diabetes patients. *Diabetes Obes Metab.* 11(8):786-94.

24. Huettner S, Graefe-Mody EU, Withopf B, **Ring A**, Dugi KA (2008) Safety, tolerability, pharmacokinetics, and pharmacodynamics of single oral doses of BI 1356, an inhibitor of dipeptidyl peptidase 4, in healthy male volunteers. *J Clin Pharmacol* 48 (10), 1171 – 1178.
25. Huang F, Koenen-Bergmann M, MacGregor T, **Ring A**, Hattox S, Robinson R (2008). Pharmacokinetic and Safety Evaluation of BILR 355, a Second-Generation Nonnucleoside Reverse Transcriptase Inhibitor, in Healthy Volunteers. *Antimicrobial agents and chemotherapy*, 52 (12): 4300–4307.
26. Klueglichs M, **Ring A**, Scheuerer S, Trommeshauser D, Schuijt C, Liepold B, Berndt G. (2005). Ibuprofen extrudate, a novel, rapidly dissolving ibuprofen formulation: relative bioavailability compared to ibuprofen lysinate and regular ibuprofen, and food effect on all formulations. *J Clin Pharmacol*. 45(9):1055-61.

Abstracts for presentations and posters

- Overall more than 70 abstracts, including about 40 as first author
 - Statistical / methodological contributions: >40
 - Clinical pharmacology or pharmacokinetic studies: >20
 - Patient efficacy and pharmacodynamic studies: 10
- Additionally more than 25 invited presentations at commercial scientific conferences

Conference Awards

1. Kossow C, **Ring A**. (2010) Simulation study to Investigate the Statistical Efficiency of various Heart Rate Correction Methods for the QT Interval. DIA Europe, Monaco. *Drug Inf J* 44(3): 201-202. *Selected for DIA Student Poster Session.*
2. Glomb P, **Ring A**. (2008) Use of baseline ECGs in the evaluation of thorough-QT studies with crossover design. DIA Europe, Barcelona. *Drug Inf J* 42(3): 202. *Selected for DIA Student Poster Session.*
3. **Ring A**, Koenen-Bergmann M, Platz J, Gehlhar B, Ritzhaupt A. (2006) Properties of different analyses in "Thorough QT studies", compared using a QT study of Tiotropium. GMDS Leipzig. German Medical Science - Doc06gmds269 <http://www.egms.de/en/meetings/gmds2006/06gmds167.shtml> *Poster price Biometry of the GMDS 2006.*
4. Deinhard J, **Ring A**, Held L. (2006) Investigation of methods to assess the individual relationship between the RR and QT interval of the ECG. GMDS Leipzig. German Medical Science - Doc06gmds389. <http://www.egms.de/en/meetings/gmds2006/06gmds381.shtml> *Selected for GMDS Student Session.*
5. **Ring A**, Weiss M. (2003) Effizienz von Regressionsverfahren und Modellselektion bei der Schätzung pharmakokinetischer Parameter. GMDS Münster. Informatik, Biometrie und Epidemiologie in Med. und Biol. 2003; 34: 311–314. *Student Award Biometry GMDS 2003.*

Books, book contributions, and non-peer reviewed papers

1. **Ring A** (2014) Ein (statistischer) Werkzeugkasten für eine Vorlesung „Klinische Studien“ für Nicht-Statistiker. In: Rauch G, Muche R, Vontheim R. Zeig mir Biostatistik! Ideen und Material für einen guten Biometrie-Unterricht. Springer-Lehrbuch.
2. **Ring A** (2012) Tennis – Ein Bleistiftspiel mit künstlicher Intelligenz (English: „Tennis – A pencil game with artificial intelligence“). Die Wurzel, Jena, p. 183-188.
3. Glomb P, **Ring A** (2009) Einfluss verzögerter Effekte in „Exposure-Response“-Analysen klinischer QTc-Studien. In: Spilke J, Becker C, Haerting J, Schumacher E. Proceedings KSFE. Shaker Aachen. p. 79-92.
4. Häggström O. (2008) Drei Paradoxa: Translation from Swedish: **Ring A**. In: Behrends E, Gritzmann P, Ziegler GM. Pi und Co: Kaleidoskop der Mathematik. Springer p. 171-190.
5. Tanriverdio F, **Ring, A.** (2007) Implementation of bootstrapping in a replicative bioequivalence study with a highly variable drug. Phuse Conference Contributed Paper. p. 1-11.
<http://www.lexjansen.com/phuse/2007/st/st03.pdf>
6. Tanriverdio F, **Ring, A.** (2007) Planung und Implementierung der Auswertung einer replikativen Bioequivalenzstudie mit Hilfe der “Scaled Average Bioequivalence”. In: Muche R, Bödecker, RH: Proceedings KSFE. Shaker Aachen. p. 349-364.
7. Häggström O. (2006) Streifzüge durch die Wahrscheinlichkeitstheorie. Springer-Lehrbuch. Translation from Swedish: **Ring A**.

Book reviews, Preprints etc.

1. **Ring A** (2007) Book review: “Patterson S, Jones B. Bioequivalence and Statistics in Clinical Pharmacology. (2005)” Pharmaceut. Statist. 2007; 6: 312–313.
2. **Ring A** (2004) Book review: “Chow SC, Shao J. (2002) Statistics in Drug Research: Methodologies and Recent Developments”. ISCB Newsletter.
3. **Ring, A.** (2004), State symmetries in matrices and vectors on finite state spaces. Preprint arXiv:math/0409264. <http://arxiv.org/abs/math/0409264>.

Supervised Masters Thesis

1. Deinhard J. (2006) Analysis of the relation of heart rate and QT duration. Ludwig-Maximilians-Universität München. Fakultät für Mathematik, Informatik und Statistik.