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Appendix

List of publications

Grauschopf U, Lilie H, Honold K, Wozny M, **Reusch D**, Esswein A, Schaefer W, Ruecknagel K, and Rudolph R. The N-Terminal Fragment of Human Parathyroid Hormone Receptor 1 Constitutes a Hormone Binding Domain and Reveals a Distinct Disulfide Pattern. *Biochemistry* 2000; 39(30) 8878-8887

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Hensel M, Steurer R, Fichtl J, Elger C, Wedekind F, Petzold A, Schlothauer T, Molhoj M, **Reusch D**, and Bulau P. Identification of potential sites for tryptophan oxidation in recombinant antibodies using tert-butylhydroperoxide and quantitative LC-MS, *PLoS.One.* 2011;6 e17708

Diepold K, Bomans K, Wiedmann M, Zimmermann B, Petzold A, Schlothauer T, Mueller R, Moritz B, Stracke JO, Molhoj M, **Reusch D** and Bulau P. Simultaneous assessment of Asp isomerization and Asn deamidation in recombinant antibodies by LC-MS following incubation at elevated temperatures, *PLoS.One* 2012.7 e30295

Bomans K, Lang A, Roedl V, Adolf L, Kyriosoglou K, Diepold K, Eberl G, Moelhoej, M, Strauss U, Schmalz C, Vogel R, **Reusch D**, Wegele H, Wiedmann M and Bulau P. Identification and monitoring of host cell proteins by mass spectrometry combined with high performance immunochemistry testing. *PLoS One* 2013.8 e81639

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Reusch D, Haberger M, Kailich T, Heidenreich AK, Kampe M, Bulau P, et al. High-throughput glycosylation analysis of therapeutic immunoglobulin G by capillary gel electrophoresis using a DNA analyzer. *MAbs* 2014; 6:185-96

Haberger M, Bomans K, Diepold K, Hook M, Gassner J, Kepert J, Hienz B, Wiedmann M, Grauschopf U, **Reusch D** et al. Assessment of chemical modifications of sites in the CDRs of recombinant antibodies: Susceptibility vs. functionality of critical quality attribute. *MAbs* 2014, 6:327-39

Reusch D, Habberger M, Maier B, Maier M, Kloseck R, Zimmermann B, et al. Comparison of methods for the analysis of therapeutic immunoglobulin G Fc-glycosylation profiles-Part 1: Separation-based methods. *MAbs* 2015; 7:167-79

Reusch D, Habberger M, Falck D, Peter B, Maier B, Gassner J, Hook M, Wagner K, Bonnington L, Bulau P, Wuhrer M. Comparison of methods for the analysis of therapeutic immunoglobulin G Fc-glycosylation profiles-Part 2: mass spectrometric methods. *MAbs* 2015; 7:732-42

Reusch D, Tejada M. Fc glycans of therapeutic antibodies as critical quality attributes. *Glycobiology* 2015, submitted

Thomann M, Schlothauer T, Dashivets T, Malik S, Avenal C, Bulau P, Ruger P, Schnueriger A and **Reusch D**. In vitro glycoengineering of IgG1 and its effect on Fc receptor binding and ADCC activity. *Plos One* 2015, accepted

Tejada M, Thomann M, Schnueriger A, Schiffl K and **Reusch D**. Fc-galactosylation modulates antibody-dependent cellular cytotoxicity of therapeutic antibodies. *Molecular Immunology* 2015, submitted

Habberger M, Heidenreich AK, Hook M, Gassner J, Bomans K, Yegres M, Schlothauer T, Zwick A, Zimmermann B, Wegele H, Bonnington L, **Reusch D** and Bulau P. Functional assessment of antibody oxidation by native mass spectrometry. *Mabs* 2015, accepted

Dotz V, Haselberg R, Shubhakar A, Kozak PR, Falck D, Rombouts Y, **Reusch D**, Somsen GW, Fernandes DL and Wuhrer M. Mass Spectrometry for Glycosylation Analysis of Biopharmaceuticals. *TrAC* 2015, accepted

Ruiz FM, Gilles U, Lindner I, Andre S, Romero A, **Reusch D** and Gabius HJ. Combining Crystallography and Hydrogen/Deuterium Exchange to Study Galectin-Ligand Complexes. *Chem Eur J* 2015, accepted

Falck D, Jansen B, Plomp R, **Reusch D**, Habberger M, Wuhrer M. Glycoforms of immunoglobulin G based biopharmaceuticals are differentially cleaved by trypsin due to the glycoform influence on higher order structure. *Journal of Proteome Research* 2015, submitted

Echeverria B, Etxebarria J, Ruiz N, Hernandez A, Calvo J, Habberger M, **Reusch D** and Reichardt NC. Absolute Quantification of glycans by MALDI-ToF MS with synthetic ¹³C-enriched internal standards. *Angewandte Chemie Intl.* 2015, submitted



List of patents

Hansen S, Kuenkele KP, **Reusch D**, Schumacher R. WO 2007115814. Antibodies against insulin-like growth factor I receptor and uses thereof (An antibody binding to IGF-IR, being of human IgG1 or IgG3 type and being glycosylated with a sugar chain at Asn297, said antibody being characterized in that the amount of fucose within said sugar chain is at least 99%). Apr 10, 2007

Hansen S, Kuenkele KP, **Reusch D**, Schumacher R. WO 2007115813. Fucosylation of therapeutic antibodies (The antibodies are characterized as glycosylated at Asn297 with an amount of fucose at least 99%. In one example, a fucosylated humanized IgG1 directed against insulin-like growth factor-1 receptor is produced and its ADCC effector function examined). Oct 18, 2007

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Hueller M and **Reusch D**, WO 2013050335. Process for antibody G1 glycoform production (method for producing an Ig or Ig fragment or Ig fusion with G1 glycoform structure. The method comprises the sequential incubation of the Ig with a galactosyltransferase, a sialyltransferase, a β -1,4-galactosidase and a sialidase). Apr 11, 2013

Thomann M, **Reusch D** et al. In vitro glycoengineered immunoglobulin 1 antibodies. Filed Sept 10, 2014.

Thomann M, **Reusch D** et al. Galactoengineered immunoglobulin 1 antibodies. Filed Dec 23, 2014.

Curriculum vitae

Dietmar Reusch was born at the 4th of May 1962 in Neuhausen/Erms, Germany. He attended grammar school (Gymnasium) at the Dietrich Bonhoeffer Gymnasium in Metzingen/Erms, Germany, from which he graduated in 1981. After his military service he started his studies at Reutlingen University for applied science in 1983 where he earned his M.Sc. degree (Diplom-Ingenieur (FH)). The research for his master thesis, which was performed at Bosch in Schwieberdingen (Germany), concerned the development of methods for analytics of scrubbing solutions. In 1987 he started to work for the TÜV Stuttgart, Germany (Technical Control Board) as chemistry engineer. In 1988 he joined Roche Diagnostics GmbH (former Boehringer Mannheim) in Penzberg, Germany. Here he began his work with respect to glycans by developing kits and enzymes for glycan research under the supervision of Dr. A. Haselbeck. His present job title is Director Analytics Characterization in Roche Pharma Biotech Production and Development. He is responsible for the characterization of large molecules from Roche including glycoanalysis of therapeutic antibodies.

In April 2011 he got the opportunity to start his PhD entitled: "Methods for the glycosylation analysis of therapeutic antibodies" in collaboration with the Glycoproteomics section, Department of Parasitology of the Leiden University Medical Center, at Roche in Penzberg, Germany.

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