

## **CURRICULUM VITAE**

**Simon N Twigger, Ph.D.**  
**Assistant Professor**  
**Department of Physiology**

Office Address: Medical College of Wisconsin  
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Place of Birth: Birmingham, England

Citizenship British

Education: 10/1987 – 07/1990 University of Nottingham, England,  
B.Sc. Biochemistry & Genetics,  
10/1990 – 10/1994 University of Nottingham, England,  
Ph.D. Biochemistry

### Postgraduate Training and Fellowship Appointments:

01/1995 – 10/1998 Postdoctoral Research Fellow, Department of Biochemistry,  
Medical College of Wisconsin, Milwaukee, WI  
10/1998 – 02/2000 Postdoctoral Research Fellow, Human Molecular Genetic  
Center, Medical College of Wisconsin, Milwaukee, WI

### Faculty Appointments:

02/2000 – present Assistant Professor, Department of Physiology, Medical College  
of Wisconsin, Milwaukee, WI

Awards, Honors:

05/2001	Okamoto Young Investigator Award, Rat Genetics, Genomics and Model Systems for Human Disease, Berlin, Germany, May 2001
10/1995	Welcome Foundation travel award
1994	EMBO-Rappaport Graduate Student award

Regional/local/appointed leadership and committee positions:

2001-2002	Human Molecular Genetics Center Faculty Incentive Committee
2000- 2004	Bioinformatics Research Center Strategy Committee
2000- 2004	Bioinformatics Research Center Team Leaders Committee
2004- Present	Bioinformatics Program steering committee
2007 - Present	MCW Graduate Studies Council member
5/2007-Present	MCW CTSA grant, Biomedical Informatics section leader.

National elected/appointed leadership and committee positions:

2000 - 2004	Co-Secretary to the International Rat Genome and Nomenclature Committee.
2005 – Present	Meeting organization committee for the International BioCurator organization.
3/2006	Invited member of NCRRT Translational Medicine working group
6/2006	Invited member of NHLBI Ontologies for Cardiovascular Medicine working group.
7/2006	Member of three-person review panel for UBiC, the University of British Columbia Bioinformatics Center.
5/2007	Invited member of NHLBI HLB-STAT! ontology workshop
5/2007	Invited member of NCRRT Genetic Resources for the Rhesus workshop

Research Grants, Contracts, Awards:Peer Review

Title: Rat Genome Database  
 Source: NIH (NHLBI)  
 Role: Co-Investigator  
 Dates: 10/1999 – 10-2009  
 Direct Funds: \$1,364,417 (annually)

Title: Development of Novel Mass Spectrometry Tools for Individual Cell Proteome Analysis (Bioinformatics Component)  
 Source: NIH (NHLBI)  
 Role: Co-Investigator, Component Director

Dates: 9/2002 – 9/2009  
 Direct Funds: \$229,641 (annually)

Title: Gene Ontology Consortium  
 Source: NIH (NHGRI)  
 Role: PI (of Subcontract)  
 Dates: 01/2001 – 02/20012  
 Direct Funds: \$135,000 (annually)

#### Completed Grants

Title: A Literature Curation Tool for Organism Databases  
 Source: NIH (NHGRI)  
 Role: PI (of Subcontract)  
 Dates: 10/2002 – 10/2005  
 Direct Funds: \$85,214 (annually)

#### Invited Lectures, Workshops, Site Visits:

##### Invited Lectures

1. S.N.Twigger, “Taming the List, the various sides of data annotation”, University of Kentucky, Lexington, KY, February, 2007
2. S.N.Twigger, “Taming the List, the various sides of data annotation”, Institute for Systems Biology, Seattle, WA, January, 2007
3. S.N.Twigger, “Taming the Gene List – Bioinformatic approaches to annotating ‘omics data”, UW Madison Genome Center, October, 2006
4. S.N. Twigger, “Bioinformatics projects at the Medical College of Wisconsin” National Institute of Genetics, Mishima, Japan, January 2006
5. **S. N. Twigger**,. “*Rat Genome Database – supporting the sequence with new tools and new directions.*”, 15<sup>th</sup> International Workshop on Genetic Systems in the Rat, Copenhagen, Denmark, September 2004
6. **S. N. Twigger**, “*Towards a Rat Phenome Project*” – Computational Genomics, Boston, October 2003
7. **S. N. Twigger**, “*Bioinformatics, past, present and future*” - University of Wisconsin, Whitewater, February 2003

8. **S. N. Twigger**, "*Model organism Databases, data and tools*", Invited speaker in APS symposium entitled "*Bioinformatics in Physiological Genomics*", Experimental Biology 2002, New Orleans, April 2002.
9. **S. N. Twigger**, "*Disease sequence mining in the Rat Genome Database*", Invited speaker in APS symposium entitled "*Bioinformatics in Physiological Genomics*", Experimental Biology 2002, New Orleans, April 2002.
10. **S. N. Twigger**, D. Chen, J. Lu, M. Shimoyama, D. Pasko, P. Long, J. Ginster, R. Nigam, C.F. Chen, J. Ginster, G. Gopinathrao, H. Ramachandran, S. Bromberg, H. Jacob and P.J. Tonellato "*Rat Genome Database – A comparative genomics platform for rat, mouse and human*", Invited speaker in APS symposium entitled "*Applications of physiological genomics: the discovery of novel genes for volume and pressure regulation*", Experimental Biology 2002, New Orleans, April 2002

#### Workshops

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| 7/2003   | Instructor at MCW PhysGen training course, organized by Dr Anne Kwitek, Medical College of Wisconsin.                       |
| 10/ 2000 | Instructor at Cold Spring Harbor Laboratory "Positional Cloning" course organized by Dr Gary Silverman, Harvard University. |

#### Medical College Teaching (past 5 years):

- 2006 - Present Co-Director of joint MCW/Marquette University Bioinformatics masters degree program
- 2004 - Present Bioinformatics and online resources lectures for Medical College of Wisconsin Physiological Genomics course
- 2001 - Present Lecturer for joint Medical College of Wisconsin/Marquette University Bioinformatics Masters degree program
- 1999 - Present Teach seminars in Perl and basic biocomputing skills to graduate and in-house employees

### **BIBLIOGRAPHY**

#### Original Papers:

1. Sander TL, Ou JS, Densmore JC, Kaul S, Matus I, **Twigger S**, Halligan B, Greene AS, Pritchard KA Jr, Oldham KT. (2007) "Protein composition of Plasminogen Activator Inhibitor Type 1-derived endothelial microparticles", *Shock*, Aug 16<sup>th</sup>

2. Phillips GN Jr, Fox BG, Markley JL, Volkman BF, Bae E, Bitto E, Bingman CA, Frederick RO, McCoy JG, Lytle BL, Pierce BS, Song J, **Twigger SN**. (2007) "Structures of proteins of biomedical interest from the Center for Eukaryotic Structural Genomics", *J. Struct Funct. Genomics*.
3. **Simon N. Twigger**, Mary Shimoyama, Susan Bromberg, Anne E. Kwitek, Howard J. Jacob (2007) "The Rat Genome Database, update 2007 – Easing the path from disease to data and back again", *Nucleic Acid Res.* 35:D658-662
4. Weinshenker, D., Wilson, M.M., Williams, K.M., Weiss, J.M., Lamb, N.E. and **Twigger, S.N.** (2005) "Hummer - A new method for identifying informative genetic markers in selectively bred rats", *Mamm. Genome* 16:784-791.
5. **Twigger SN**, Pasko D, Nie J, Shimoyama M, Bromberg S, Campbell D, Chen J, dela Cruz N, Fan C, Foote C, Harris G, Hickmann B, Ji Y, Jin W, Li D, Mathis J, Nenasheva N, Nigam R, Petri V, Reilly D, Ruotti V, Schauburger E, Seiler K, Slyper R, Smith J, Wang W, Wu W, Zhao L, Zuniga-Meyer A, Tonellato PJ, Kwitek AE, Jacob HJ. (2005) "Tools and strategies for physiological genomics: the Rat Genome Database", *Physiological Genomics*, 17:246-256
6. Halligan, B.D., Ruotti, V., **Twigger, S.N.** and Greene, A.S. (2005) DeNovoID: a web-based tool for identifying peptides from sequence and mass tags deduced from de novo peptide sequencing by mass spectroscopy. *Nucleic Acids Res*, 33, W376-381.
7. Halligan, B. D., Slyper, R. Y., **Twigger, S. N.**, Hicks, W., Olivier, M. and Greene, A. S., (2005) "ZoomQuant: An Application for the Quantitation of Stable Isotope Labeled Peptides", *J. Amer. Soc. Mass Spectrometry*, **16**: 302-306
8. Hicks, W.A., Halligan, B.D., Slyper, R.Y., **Twigger, S.N.**, Greene, A.S. and Olivier, M. (2005) Simultaneous quantification and identification using <sup>18</sup>O labeling with an ion trap mass spectrometer and the analysis software application "ZoomQuant". *J Am Soc Mass Spectrom*, 16, 916-925.
9. Norberto de la Cruz, Susan Bromberg, Dean Pasko, Mary Shimoyama, **Simon Twigger**, Jiali Chen, Chin-Fu Chen, Chunyu Fan, Cindy Foote, Gopal R Gopinath, Glenn Harris, Aubrey Hughes, Yuan Ji, Weihong Jin, Dawei Li, Jedidiah Mathis, Natalya Nenasheva, Jeff Nie, Rajni Nigam, Victoria Petri, Dorothy Reilly, Weiye Wang, Wenhua Wu, Angela Zuniga-Meyer, Lan Zhao, Anne Kwitek, Peter Tonellato, and Howard Jacob. (2005) "The Rat Genome Database (RGD): Developments towards a Phenome Database" *Nucleic Acids Res.* **33**:D485-491.
10. Halligan, B.D., E.A. Dratz, X. Feng, **S.N. Twigger**, P.J. Tonellato, and A.S. Greene. (2004). "Peptide identification using peptide amino acid attribute vectors". *J Proteome Res* **3**: 813-820.

11. Halligan, B.D., V. Ruotti, W. Jin, S. Laffoon, **S.N. Twigger**, and E.A. Dratz. (2004). “*ProMoST (Protein Modification Screening Tool): a web-based tool for mapping protein modifications on two-dimensional gels*”. *Nucleic Acids Res* **32**: W638-644.
12. Etim, A., G. Zhou, X. Wen, H. Liu, V. Ruotti, **S. Twigger**, W. Jin, B. Matysiak, J. Mathis, P.J. Tonellato, and M.W. Datta. 2004. “*ChromSorter PC: a database of chromosomal regions associated with human prostate cancer*”. *BMC Genomics* **5**: 27.
13. Gibbs, R.A. (and 129 other authors). (2004). “*Genome sequence of the Brown Norway rat yields insights into mammalian evolution*”. *Nature* **428**: 493-521.
14. **Twigger, S.N.** (2004). “*Of rats and men*”. *Genome Biol* **5**: 314.
15. **Simon N. Twigger**, Jeff Nie, Victor Ruotti, Jiaming Yu, Dan Chen, Dawei Li, Jed Mathis, Vijay Narayanasamy, Gopal R. Gopinath, Dean Pasko, Mary Shimoyama, Norberto de la Cruz, Susan Bromberg, Anne E. Kwitek, Howard J. Jacob and Peter J, Tonellato (2004) “*Integrative Genomics: In Silico coupling of Rat physiology and complex traits to Mouse and Human data*”, *Genome Research*, **14**:651-660
16. Michael A. Thomas, Chin-Fu Chen, Michael I. Jensen-Seaman, Peter J. Tonellato and **Simon N. Twigger** (2003) “Phylogenetics of Rat Inbred Strains”, *Mammalian Genome*, **14**:1-4.
17. **Simon Twigger**, Jian Lu, Mary Shimoyama, Dan Chen, Dean Pasko, Hanping Long, Jessica Ginster, Chin-Fu Chen, Rajni Nigam, Anne Kwitek-Black, Janan Eppig, Lois Maltais, Donna Maglott, Greg Schuler, Howard Jacob and Peter Tonellato (2002) “*Rat Genome Database (RGD) – mapping disease onto the genome*”, *Nucleic Acids Res.* **30**: 125-128
18. Anne E. Kwitek-Black, Peter J. Tonellato, Dan Chen, Jo Gullings-Handley, Yongjian Samuel Cheng, **Simon Twigger**, Todd E. Scheetz, Thomas L. Casavant, Monika Stoll, Marcelo A. Nobrega, Masahide Shiozawa, M. Bento Soares, Val C. Sheffield, Howard J. Jacob (2001) “*Automated Construction of High-Density Comparative Maps Between Rat, Human, and Mouse*” *Genome Research* **11**: 1935-1943
19. **S. Twigger**, J. Lu, M. Shimoyama, D. Pasko, P. Long, J. Ginster, C.F. Chen, R. Nigam, D. Chen, Z. Wang, A. Kwitek-Black, J. Eppig, D. Maglott, G. Schuler, F. Stahl, G. Levan, H. Jacob and P.J. Tonellato. “*Rat Genome Database: A comparative genomics platform for rat, mouse and human*”, *Journal of Molecular Medicine*, **79**(2-3):B30, 2001
20. Gosele C, Hong L, Kreitler T, Rossmann M, Hieke B, Gross U, Kramer M, Himmelbauer H, Bihoreau MT, K , **Twigger S**, Tonellato PJ, Jacob HJ, Schalkwyk LC, Lindpaintner K, Ganten D, Lehrach H, Knoblauch M. (2000) “*High-throughput scanning of the rat genome using interspersed repetitive sequence-PCR markers*”, *Genomics* **69**(3):287-94

21. Robert Steen, Anne E. Kwitek-Black, Christopher Glenn, Jo Gullings-Handley, William Van Etten, O. Scott Atkinson, Diane Appel, **Simon Twigger**, Melanie Muir, Tim Mull, Mary Granados, Mushira Kissebah, Kerri Russo, Robbin Crane, Michael Popp, Marc Peden, Tara Matise, Donna M. Brown, Jian Lu, Stephen Kingsmore, Peter J. Tonellato, Steve Rozen, Donna Slonim, Peter Young, Margit Knoblauch, Abraham Provoost, Detlev Ganten, Steven D. Colman, Jonathan Rothberg, Eric S. Lander, and Howard J. Jacob (1999) "*A high-density integrated genetic linkage and radiation hybrid map of the laboratory rat*". *Genome Research* 6:1-8
22. Hingamp, P.M., Leyland, M.L., Webb, J. **Twigger, S.N.**, Mayer, R.J. and Dixon, L.K. (1995) "*Characterisation of a ubiquitinated protein which is externally located in African Swine Fever virions*". *Journal of Virology* 69:1785-1793

#### Book Chapters:

1. **Twigger, S.N.**, Zuniga-Meyer, A., Smith, J. and Bromberg, S.(2006) "*Exploring Phenotypic Data at the Rat Genome Database*" in *Current Protocols in Bioinformatics*, Unit 1.14.
2. Yu, D., Wu, I., Narayanasamy, V., **Twigger, S.N.**, and Rhee, S (2006) "*PubSearch and PubFetch: A Simple Management System for Semiautomated Retrieval and Annotation of Biological Information from the Literature*", *Current Protocols in Bioinformatics*, Unit 9.7.

#### Oral Presentations:

1. **Simon N. Twigger**, Mary Shimoyama, Weihong Jin, Andrew Patzer, Anne E. Kwitek, Howard J. Jacob, "*RGD Disease portals, using ontologies to provide a disease oriented view of Rat, Mouse and Human Genomes*", *Genome Informatics*, CSH/Wellcome Trust, Cambridge, UK, October 2006
2. **Simon N. Twigger**, Dean Pasko, Susan Bromberg, Mary Shimoyama, Norie dela Cruz, Peter J. Tonellato, Howard J. Jacob and the RGD Team. "*Rat Genome Database – supporting the sequence with new tools and new directions.*", 15<sup>th</sup> International Workshop on Genetic Systems in the Rat, Copenhagen, Denmark, September 2004
3. **S. N. Twigger**, "*Genome sequence resources at the Rat Genome Database*" – Rat Genomics and Models, Cold Spring Harbor, NY, December 2003
4. **S. Twigger**, M. Shimoyama, J. Mathis, J. Nie, V. Ruotti, N. dela Cruz, J. Lu, D. Pasko, S. Bromberg, C.F. Chen, G. Gopinathrao, R. Nigam, H. Ramachandran and P.J. Tonellato. "*Rat Genome Database – Disease to QTL to Sequence*", 14<sup>th</sup> International Workshop on Genetic Systems in the Rat, Kyoto Japan, October 2002
5. **S. Twigger**, M. Shimoyama, J. Lu, D. Pasko, D. Chen, R. Nigam, J. Mathis, C.F. Chen, P. Long, J. Ginster, J. Eppig, D. Maglott, G. Schuler, H. Jacob and P.J. Tonellato. "*Rat Genome*

*Database – Disease to QTL to Sequence*”, CHSL/Wellcome Trust Genome Informatics, Hinxton, Cambridge, September 2002.

6. **S. Twigger**, C.F. Chen, J. Lu, M. Shimoyama, D. Pasko, P. Long, J. Ginster, R. Nigam, D. Chen, Z. Wang, A. Kwitek-Black, J. Eppig, D. Maglott, G. Schuler, H. Jacob and P.J. Tonellato. “*Rat Genome Database tools and methods for disease research*”, CHSL Physiological Genomics and Rat Models, Cold Spring Harbor, December 2001.
7. **S. Twigger**, R. Nigam, J. Lu, M. Shimoyama, D. Pasko, H. Long, J. Ginster, C.F. Chen, R. Nigam and P.J. Tonellato. “*Rat Genome Database – Gene Ontology*”, Gene Ontology Users Meeting, Chicago, October 2001.
8. **S. Twigger**, J. Lu, M. Shimoyama, D. Pasko, P. Long, J. Ginster, C.F. Chen, R. Nigam, D. Chen, Z. Wang, A. Kwitek-Black, J. Eppig, D. Maglott, G. Schuler, F. Stahl, G. Levan, H. Jacob and P.J. Tonellato. “*Rat Genome Database – Comparative Genomics and Beyond*”, CSHL Genome Informatics, Cambridge, UK, August 2001.
9. **S. Twigger**. “*Rodent Model organism Databases – New Data and Tools*”, Midwest Physiological Society, Madison WI, June 2001.
10. **Simon Twigger**, Jian Lu, Deying Chen, Zhitao Wang, Dean Pasko, Mary Shimoyama, Anne Black, Jo Gullings-Handley, Scott Atkinson, Janan Eppig, Greg Schuler, Fredrik Stahl, Goran Levan, Peter J. Tonellato and Howard Jacob. “*Rat Genome Database – Tools for the Rat Researcher*”, XIII International Workshop on Genetics Systems in the Rat, Goteborg, Sweden, June 2000.
11. **S. Twigger** “*Physiological Genomics and Bioinformatics: Methods to Explore the Genome*”, Experimental Biology 2000, San Diego, CA. April 2000.

#### Abstracts:

1. **Simon Twigger**, Zhanchi Wang, Stacy Zacher, Mary Shimoyama, Shama Mirsa, Michael Olivier, Anne E. Kwitek, Howard J. Jacob and Andrew Greene “*Integrating Rat Genomics, Proteomics and Phenotype data using Biomart*”, Genome Informatics, Cambridge, UK, October 2006.
2. Glenn Bushee, Akshat Kapoor, Norie dela Cruz, Francis Peterson, Brian Volkman and **Simon N. Twigger** “*Annotation workflows for structural genomics*”, Genome Informatics, Cambridge, UK, October 2006.
3. **Simon N. Twigger**, Susan K. Bromberg, Mary E. Shimoyama, Anne E. Kwitek, Howard J. Jacob and the Rat Genome Database Team. “*Physiological Genomics at the Rat Genome Database (RGD)*. CSH Biology of the Genome, Cold Spring Harbor, May 2006.

4. **Simon Twigger**, Mary Shimoyama, Victoria Petri, Susan Bromberg, Dean Pasko, Wenhua Wu, Jiali Chen, Nataliya Nenasheva, Anne Kwitek, Howard Jacob, “Integrating complex biological data using multiple ontologies.” BioCurator Meeting, Asilomar, CA. December 2005
5. Victoria Petri, Mary Shimoyama, Dean Pasko, Susan Bromberg, Wenhua Wu, Nataliya Nenasheva, Jiali Chen, **Simon Twigger**, Anne Kwitek, Howard Jacob “The Pathway Ontology . a new controlled vocabulary developed at Rat Genome Database.” BioCurator Meeting, Asilomar, CA. December 2005
6. **Simon N. Twigger**, Jiali Chen, Jeff Nie, Anne Kwitek, “Flash GViewer: a Flash-based visualization tool providing an overview of genomes and their data” Genome Informatics, CSH, November 2005.
7. **Simon N. Twigger**, B.D. Halligan, V. Ruotti, R. Slyper, W. Hicks, J. Yu, M. Olivier, M. Ramsey, L. Smith, A.S. Greene, “Bioinformatics Resources for Proteomics at the Medical College of Wisconsin”, 3<sup>rd</sup> HUPO World Congress, Beijing, China, October 2004.
8. Brian D. Halligan and Simon N. Twigger, “Testing of gene predictions by proteomic methods”, Genome Informatics, Hinxton, UK September, 2004
9. Norberto B. Dela Cruz, Jedidiah Mathis, Mary Shimoyama, Dean Pasko, Susan Bromberg, **Simon Twigger**, Jeff Nie, Anne Kwitek, Victoria Petri, Weiye Wang, Peter Tonellato, Howard Jacob “Attaching Biology to the Genome using Ontologies”, ISMB, Glasgow Scotland, August 2004
10. Dean Pasko, Rajni Nigam, Susan Bromberg, **Simon Twigger**, Mary Shimoyama, Jiali Chen, Norberto de la Cruz, Chunyu Fan, Cindy Foote, Glenn Harris, Jed Mathis, Nataliya Nenasheva, Victoria Petri, Dorothy Reilly, Weiye Wang, Lan Zhao, Wenhua Wu, Angela Zuniga-Meyer, Peter Tonellato, Howard Jacob, “Genome Curation and Annotation and the Rat Genome Database”, ISMB, Glasgow Scotland, August 2004
11. **Simon N. Twigger**, Jeff Nie, Jiaming Yu, Victor Ruotti, Dawei Li, Dean Pasko, Susan Bromberg, Mary Shimoyama, Norie dela Cruz, Anne Kwitek, Peter J. Tonellato, Howard J. Jacob, “Rat Genome Database, Tools for Quantitative Trait Analysis in Rat, Mouse and Human.” Keystone Symposia, Breckenridge, CO, January 2004.
12. Mary Shimoyama, Norberto de la Cruz, **Simon Twigger**, Dean Pasko, Susan Bromberg, Chin-Fu Chen, Jiali Chen, Chunyu Fan, Cindy Foote, Aubrey Hughes, Jed Mathis, Nataliya Nenasheva, Jeff Nie, Rajni Nigam, Victoria Petri, Dorothy Reilly, Weiye Wang, Wenhua Wu, Lan Zhao, Angela Zuniga-Meyer, Janan Eppig, Judith Blake, Peter Tonellato, Howard Jacob, “Phenotype and Disease Data at the Rat Genome Database”, CSHL Rat Genomics and Models, December 2003.
13. Dean Pasko, **Simon Twigger**, Mary Shimoyama, Susan Bromberg, Norberto de la Cruz, Chin-Fu Chen, Jiali Chen, Chunyu Fan, Cindy Foote, Aubrey Hughes, Jed Mathis, Nataliya Nenasheva, Jeff Nie, Rajni Nigam, Victoria Petri, Dorothy Reilly, Victor Ruotti, Weiye Wang,

Wenhua Wu, Lan Zhao, Angela Zuniga-Meyer, Janan Eppig, Donna Maglott, Peter Tonellato, Howard Jacob, “A new search tool for data at the Rat Genome Database, RGD”, CSHL Rat Genomics and Models, December 2003.

14. Susan Bromberg, Dean Pasko, Norberto de la Cruz, Mary Shimoyama, **Simon Twigger**, Chin-Fu Chen, Jiali Chen, Chunyu Fan, Aubrey Hughes, Jed Mathis, Nataliya Nenasheva, Jeff Nie, Rajni Nigam, Victoria Petri, Cindy Foote, Dorothy Reilly, Victor Ruotti, Weiye Wang, Wenhua Wu, Lan Zhao, Angela Zuniga-Meyer, Janan Eppig, Peter Tonellato, Howard Jacob, Rat Genome Database (<http://rgd.mcw.edu/>) A resource for Genomic Information”, CSHL Rat Genomics and Models, December 2003.
15. Norberto de la Cruz, Mary Shimoyama, Lan Zhao, Weiye Wang, **Simon Twigger**, Dean Pasko, Susan Bromberg, Chin-Fu Chen, Jiali Chen, Chunyu Fan, Aubrey Hughes, Jed Mathis, Nataliya Nenasheva, Rajni Nigam, Wenhua Wu, Angela Zuniga-Meyer, Peter Tonellato, Howard Jacob “Implementation of Multiple Ontologies at the Rat Genome Database”, CSHL Rat Genomics and Models, December 2003.
16. Susan Bromberg, Dean Pasko, Wenhua Wu, Chunyu Fan, Chin-Fu Chen, Gopal Gopinathrao, Rajni Nigam, Cindy Foote, Dorothy Reilly, Angela Zuniga-Meyer, Jiali Chen, Norberto de la Cruz, Mary Shimoyama, **Simon Twigger**, Aubrey Hughes, Jed Mathis, Nataliya Nenasheva, Victoria Petri, Weiye Wang, Lan Zhao, Donna Maglott, Svetlana Dracheva, Daniel Barrell, Michele Magrane, Janan Eppig, Peter Tonellato, Howard Jacob, “ Integration of Swiss-Prot and LocusLink Rat gene data into the Rat Genome Database”, CSHL Rat Genomics and Models, December 2003.,
17. Susan K. Bromberg, Rajni Nigam, Chin-Fu Chen, Angela Zuniga-Meyer, Cynthia Foote, Dorothy Reilly, Peter Bazely, Dean Pasko, Chunyu Fan, Wenhua Wu, Mary Shimoyama, **Simon Twigger**, Nataliya Nenasheva, Charles W. Wang, Jiali Chen, Norberto de la Cruz, Lan Zhao, Aubrey Hughes, Jedediah Mathis, Victoria Petri, J. Critser, W. Rall, C. Hansen, T. Serikawa, Peter Tonellato, Howard J. Jacob, “Rat Genome Database, A resource for Rat Strain information”, CSHL Rat Genomics and Models, December 2003
18. G.Gopinathrao, Dean Pasko, **Simon Twigger**, Mary Shimoyama, Susan Bromberg, Chin-Fu Chen, Dan Chen, Jiali Chen, Chunyu Fan, Jessica Ginster, Aubrey Hughes, Hanping Long, Jian Lu, Jed Mathis, Nataliya Nenasheva, Jeff Nie, Rajni Nigam, Victor Ruotti, Weiye Wang, Howard Jacob, and Peter Tonellato, “Rat Genome Database – Sequence to Biology: Moving beyond Rat Genome Sequence”, CSH Genome of Homo Sapiens, May 2003.
19. M. Shimoyama, **S.N. Twigger**, R. Nigam, A. Hughes, J. Mathis, N.B. de la Cruz, J. Lu, D. Pasko, S. Bromberg, C.F. Chen, G. Gopinathrao, H. Ramachandran, J. Critser, W. Rall, C. Hansen, T. Serikawa, P.J. Tonellato, “Rat Genome Database, Disease Model Resource”, FASEB EB2003, San Diego, CA.
20. P.J. Tonellato, **S.N. Twigger**, M. Shimoyama representing the Rat Genome Database and the Rat Genome Sequencing Consortium., “Mechanistic Mining of Rat Disease Genes”, FASEB EB2003, San Diego, CA.

21. S. Bromberg, **S. Twigger**, J. Lu, M. Shimoyama, D. Pasko, C.F. Chen, R. Nigam, G. Gopinathrao, J. Chen, J. Mathis, A. Hughes, N. de la Cruz, J. Ginster, H. Ramachandran, J. Eppig, D. Maglott, F. Stahl, P.J. Tonellato, “Rat Genome Database: A comparative genomics platform for Rat, Mouse and Human”, FASEB EB2003, San Diego, CA.
22. Bromberg S., Shimoyama M., Mathis J., **Twigger S.**, Lu J., Pasko D., Nie J., Ruotti V., Chen C.-F., Nigam R., Gopinathrao G., Long H., Chen J., Ramachandran H., Jacob H., Tonellato P. “Rat genome database (RGD) - Disease oriented research resource”, 14<sup>th</sup> International Workshop on Genetic Systems in the Rat, Kyoto Japan, October 2002
23. Nigam R., Bromberg S.K., Chen C.-F., Gopinathrao G., Ramachandran H., **Twigger S.**, Jacob H.H., Tonellato P.J. “Rat genome database (RGD) – Incorporation of Gene Ontology”, 14<sup>th</sup> International Workshop on Genetic Systems in the Rat, Kyoto Japan, October 2002
24. Pasko D., Long H., Lu J., Chen J., Shimoyama M., Bromberg S., **Twigger S.**, Chen C.F., Gopinathrao G., Nigam R., Ramachandran H., Ginster J., Mathis J., Nie J., Ruotti V.M., Chen D., Tonellato P.J. “Sequence resources at the Rat genome database (RGD)”, 14<sup>th</sup> International Workshop on Genetic Systems in the Rat, Kyoto Japan, October 2002
25. **S. Twigger**, J.Lu, M. Shimoyama, D. Pasko, J. Chen, C.F. Chen, R. Nigam, J. Ginster, S.Bromberg, G. Gopinathrao, H. Ramachandran, A. Kwitek, J. Eppig, D. Maglott, G. Schuler, H. Jacob and P.J. Tonellato. “*Rat Genome Database* ”, 14<sup>th</sup> International Workshop on Genetic Systems in the Rat, Kyoto Japan, October 2002
26. **S. Twigger**, M. Shimoyama, J. Lu, D. Pasko, D. Chen, R. Nigam, J. Mathis, C.F. Chen, P. Long, J. Ginster, J. Eppig, D. Maglott, G. Schuler, H. Jacob and P.J. Tonellato. “*Rat Genome Database – Disease to QTL to Sequence*”, CHSL Genome Sequencing and Biology, Cold Spring Harbor, May 2002.
27. M. Shimoyama, J. Mathis, M. Datta, A. Etim, S. Twigger, J. Lu, CF. Chen, R. Nigam, H. Ramachandran, G. Gopinathrao, S. Bromberg, D. Pasko, H. Long, J. Chen, D. Chen, J. Nie, V. Ruotti, H. Jacob, P.J. Tonellato, “*Rat Genome Database – disease oriented research resource* ”, CHSL Genome Sequencing and Biology, Cold Spring Harbor, May 2002.
28. **S. Twigger**, D. Chen, J. Lu, M. Shimoyama, D. Pasko, P. Long, J. Ginster, R. Nigam, C.F. Chen, J. Ginster, G. Gopinathrao, H. Ramachandran, S. Bromberg, H. Jacob and P.J. Tonellato. “*Rat Genome*”, Experimental Biology, New Orleans, April 2002.
29. **S. Twigger**, D. Chen, J. Lu, M. Shimoyama, D. Pasko, P. Long, J. Ginster, R. Nigam, C.F. Chen, J. Ginster, G. Gopinathrao, H. Ramachandran, S. Bromberg, H. Jacob and P.J. Tonellato. “*Rat Genome*”, Experimental Biology, invited presenter to MARC Seminar on Genomics in Health and Disease, New Orleans, April 2002.

30. P.J. Tonellato, **S. Twigger**, J. Mathis, M. Shimoyama, D. Chen, J. Nie, D. Brown, M. Datta, “*Disease Oriented Rat Resource*”, Experimental Biology, New Orleans, April 2002.
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