

# Sara Sybesma Tolsma, Ph.D.

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## Education

### **Northwestern University, Department of Microbiology, Immunology and Virology**

Chicago, IL 60611 Ph.D., June 1995, GPA 3.9/4.0.

Thesis advisor Noël Bouck. "Inhibition of Angiogenesis Controlled by Tumor Suppressor Genes: Thrombospondin-1 and Its Derived Peptides".

### **University of Iowa, Iowa City, IA Department of Biochemistry**

1984-1986, GPA 3.6/4.0.

### **Northwestern College, Orange City, IA B.A. Biology**

1984, Magna cum laude GPA 3.8/4.0.

## Professional experience

Professor, Department of Biology, Northwestern College, Orange City, IA 51041 (2009-present).

Associate Professor, Department of Biology, Northwestern College, Orange City, IA 51041 (2001-2009).

Interim Associate Dean of Faculty and Academic Staff Development, Northwestern College, Orange City, IA 51041 (2004-2006).

Assistant Professor, Department of Biology, Northwestern College, Orange City, IA 51041 (1995-2001).

Scheduled Course Rotation: Cell Biology, Genetics, Introduction to Human Anatomy and Physiology, Immunology, Introduction to the Life Sciences, First Year Seminar.

Other Courses Taught: Histology, Christian Thought in a Scientific World, Developmental Biology, Human Anatomy, Biochemistry: Molecular Genetics, Introduction to Human Anatomy, General Biology laboratory, Histology.

Institutional service: Advise 25 students per year, Faculty-Staff Welfare Committee (1996-1998), General Education Task Force (1998-1999), VPAA Search Committee (1999-2000), Faculty Development Committee (2004-2006), Dean's Council (2004-2006), Faculty Evaluation Task Force (2008), Faculty Status Committee (2001-2003, 2011-2014, - chair 2002/2003, secretary 2013/2014). Academic Administration Task Force (2014/2015). Strategic Planning Committee (2013-present). Academic Affairs Committee (2008-2011 – chair 2009/2010, 2015-present).

## Research experience

Research Technician, Department of Microbiology-Immunology, Northwestern University, Chicago IL (1986-1989).

## Grants

John Templeton Foundation Science and Religion Course Program.  
"Christian Thought in a Scientific World." Awarded 1996/1997 with B.  
Noordewier, H. Veldhuis and D. Wacome.

Northwestern College Summer Faculty Research Grants, 1996, 2002, 2003,  
2008, 2009, 2010, 2011, 2012, 2015.

Northwestern College Lilly Faculty Fellow, 2010.

## Publications

Tolsma, S.S., Thomas, E., Bauer, K.D., and Bouck, N.P., "Genetic  
Assessment of the Strength of a Cancer Suppressor Gene in Hamster Cells",  
Cancer Res., 48:46-51, 1988.

Weitzman, S., Schmeichel, C., Turk, P., Stevens, C., Tolsma, S., and Bouck,  
N., "Phagocyte Mediated Carcinogenesis: DNA from Phagocyte-Transformed  
C3H10T1/2 Cells Can Transform NIH/3T3 Cells", Membrane In Cancer Cells,  
Annals of NY Academy of Sciences, 551:103-110, 1988.

Tolsma, S.S., Madsen, E.L., Chmiel, J., Martin, A.O., and Bouck, N.P.,  
"Diagnostic Ultrasound is Unable to Enhance the Rate of Neoplastic  
Transformation in Cultured Mammalian Cells", J. of Ultrasound in Med.,  
10:637-642, 1991.

Tolsma, S.S., Cohen, J.D., Ehrlich, L.S., and Bouck, N.P., "Transformation of  
NIH/3T3 by H-ras is Accompanied by Loss of Suppressor Activity", Exp. Cell  
Res., 205:232-239, 1993.

Tolsma, S.S., Volpert, O.V., Good, D.J., Poverini, P.J., Frazier, W.F., and  
Bouck, N., "Peptides Derived from Two Separate Domains of the Matrix  
Protein Thrombospondin-1 have Anti-angiogenic Activity", J. Cell Bio.,  
122:497-511, 1993.

Tolsma, S.S. and Noordewier, B., "Discover DNA: An Introductory Workshop",  
Iowa Space Grant Conference, Oct. 1995.

Volpert, O.V., Tolsma, S.S., Pellerin, S., Fiege, J-J., Chen, H., Mosher, D.F.,  
and Bouck, N.P., "Inhibition of Angiogenesis by Thrombospondin-2", Biochem.  
Biophys. Res. Comm., 217:326-332, 1995.

Tolsma, S.S., Stack, M.S., and Bouck, N.P., "Lumen Formation and Other  
Angiogenic Activities of Cultured Capillary Endothelial Cells are Inhibited by  
Thrombospondin-1", J. Microvascular Res., 54:13-26, 1997.

Tolsma, S.S., "My Genes Made Me Do It!", Perspectives: A Journal of  
Reformed Thought, November, 1999.

Tolsma, S., "God's Word to All", The Church Herald, September 2004.

Tolsma, S.S., "Homegrown Goodness", The Classic, Summer 2008.

Tolsma, S.S., "Questions of Faith", RCA Today, Fall 2012.

Tolsma, S.S., Genetic Technologies: Christians Learning and Dialoging  
Together, submitted.

## Book Reviews

Tolsma, S.S. Book Review "Creating Life in the Lab: How new discoveries in  
synthetic biology make a case for the creator" by Fazale Rana. Perspectives  
on Science and Christian Faith, 65(01): 58-59. March 2013.

Tolsma, S.S. Book Review "Four Views on the Historical Adam" by Barrett and Caneday. Perspectives on Science and Christian Faith, 66(03):191-192. Sept. 2014.

## Abstracts

Tolsma, S.S., Erlich, L., Cohen, J., and Bouck, N.P., "Inability of the Mutated *ras* Oncogene to Maintain Transformation in NIH x NIH Hybrids", Proc. Amer. Cancer Res., **29**:465, 1988.

Weitzman, S., Stevens, Turk, Schmeichel, Tolsma, and Bouck, "Phagocyte-Mediated Carcinogenesis: DNA From Phagocyte-Transformed C3H10T1/2 Cells Transforms NIH/3T3 Cells" Proc. of the NY Acad. of Sci, 1988.

Bouck, N., Polverini, P.J., Tolsma, S.S., Frazier, W.A., and Good, D.J., "Tumor Suppressor Gene Control of Angiogenesis", Keystone Symposium, Jan. 1991.

Tolsma, S.S., Fung, Y.K., Huang, G.S., Polverini, P.J., and Bouck, N., "RB-1 Expression Abrogates the Angiogenic Phenotype of Osteosarcoma Cells", Proc. Amer. Cancer Res., **337**:68, 1991.

Tolsma, S.S., Polverini, P.J., and Bouck, N.P., "Human Tumor Lines Reverted for Tumorigenicity by Tumor Suppressor Genes Begin to Secrete Inhibitors of Angiogenesis", AACR Conference on Normal and Neoplastic Growth and Development, Oct. 1992.

Frazier, W.A., Kosfeld, M.T., Murphy-Ullrich, J.E., Gurusiddappa, S., Hood, M., Tolsma, S.S., Volpert, O.V., Good, D.J., Polverini, P., and Bouck, N., "Bioactive Peptides from Multiple Domains of Thrombospondin", Am. Soc. for Cell Biology, Dec. 1992.

Tolsma, S.S., Volpert, O., and Bouck, N., "TSP-1 and its Peptides Block Angiogenesis by Making Endothelial Cells Refractory to Stimuli and by Enhancing Differentiation", J. of Cell. Biochem, Suppl. **18A**:335, Jan. 1994.

Tolsma, S.S., Volpert, O., Lai, C.K., Liu, A. and Bouck, N., "Anti-angiogenic Activity of Thrombospondin-1 and its Peptides", Am. Soc. Cell Biology, Dec. 1994.

Dawson, D.W., Tolsma, S.S., Volpert, O.V., Polverini, P.J. and Bouck, N., "Retinoblastoma Gene Expression Alters Angiogenic Phenotype", Am. Assoc. Cancer Res. April 1995.

Eppinga, R. and Tolsma, S.S., "Determination of the Mechanism of Increased Capillary Density in Endurance-trained Skeletal Muscle", Iowa State Symposium on the Cell Cycle, April 1997.

Veldhuis, H., Noordewier, B., Tolsma, S. and Wacome, D., "Christian Thought in a Scientific World", Templeton Conference, Oxford, England, 1997.

Wagenaar, H., Starckenburg, S., Eppinga, R., and Tolsma, S.S., "Determination of Capillary Density in Rat Skeletal Muscle in Response to Endurance Training", Iowa Academy of Science Annual Meeting, April 1998.

Tolsma, S.S., L. Furlong, J. Locker, B. Wieking, J. Kleinhesselink, L. Levion, J. Parsons. "Assessing the Genetic Relationships between Mayfly (*Baetis*) Populations" Iowa Academy of Science meetings, April 2010.

Locker, D, J. Peterson, L. Furlong, and S.S. Tolsma. "Assessing the Genetic Relationships between Mayfly (*Baetis*) Populations" Iowa Academy of Science meetings, April 2011.

Tolsma, S.S. "Scientists as Members of the Body of Christ: Expanding the Scope of Adult Discipleship" American Scientific Affiliation Annual Meeting, San Diego, CA, July 2012.

Van Kalsbeek, D. G. Sterk, and Sara Sybesma Tolsma. "The Effects of Chocolate on Exercise Benefits in Rats" Iowa Academy of Science meetings, April 2013.

Feuchtenberger, M., C. Hughes, M. Komatsu, C. Linn, K. Marker, S. Mudiavita, M. Olhausen, J. Sexe, S. Thomson, B. Wilson, B. Wood, E. Wynja, and S.S. Tolsma. "In Vitro Anti-Tumor Activity of Common Plant Extracts and Their Suspected Active Chemical Agents" Iowa Academy of Science Meetings, April 2015.

Schutt, A., E. Stricklin, B. Ten Haken, J. Tolsma, L. Furlong, and S.S. Tolsma. "Analysis of Alternative Storage Conditions for DNA Recovery from Field Samples." Ecological Genomics Symposium. Kansas State University. November 2015.

## **Presentations**

Eppinga, R. and Tolsma, S.S., "Determination of the Mechanism of Increased Capillary Density in Endurance-trained Skeletal Muscle", CMA Biology-Chemistry Seminar, April 1997.

Wagenaar, H., Starckenburg, S., Eppinga R. and Tolsma, S.S., "Determination of Capillary Density and the Presence of Vascular Endothelial Cell Growth Factor in Rat Skeletal Muscles in Response to Endurance Training", CMA Biology-Chemistry Seminar, April 1998.

Engle, M. and Tolsma, S.S., "Neovascularization in Response to Endurance Training in Rats", CMA Biology-Chemistry Seminar, April 1999.

Tolsma, S.S., "Genetic Testing and Screening", New Genetics: Issues in Science, Faith and Ethics, RCA Commission on Christian Action, Hope College and Western Seminary, November 2000.

Tolsma, S.S. and S. Mathonnet-VanderWell, "Genetic Technologies: Questions, Challenges and Conversation", RCA General Synod Forum, Northwestern College, June 2002.

Tolsma, S.S. and S. Mathonnet-VanderWell, "The Creation and Use of Human Embryonic Stem Cells", RCA Commission on Christian Action Forum, Long Island, Queens, NY, March 2003.

Tolsma, S.S., "The Creation and Use of Human Embryonic Stem Cells", Western Theological Seminary, Holland, MI, September 2003.

Tolsma, S.S. "Stem Cells: What Are They; Where Do They Come From; And Why Are They Important?" Putting Science in its Place: Discovery and Responsibility, 22<sup>nd</sup> Annual Critical Issues Symposium, Hope College, Holland, MI, October 2003.

Tolsma, S.S. "The Creation and Use of Human Embryonic Stem Cells: Christian Perspectives", Northwestern College Forum, Orange City, IA, 2004.

Tolsma, S.S. "The Creation and Use of Human Embryonic Stem Cells",

Meredith Drive Reformed Church, video-taped for distribution by the RCA.  
October 2005.

Tolsma, S.S., "Individuals and Families Caring for the Environment: Putting Biblical Principles into Practice", Northwestern College, Dordt College, Center for Public Justice, 2007.

Tolsma, S.S., (with Cell Biology and Molecular Genetics classes), "Cloning: An Aid or a Limit to Diversity?" Northwestern College Day of Learning in Community, 2009.

Tolsma, S.S., (with Genetics class), "Genetically Modified Organisms: A Creation Care Role or Obstacle?" Northwestern College Day of Learning in Community, 2009.

Wieking, B, J. Locker, L. Furlong and S.S. Tolsma, "Assessing the Genetic Relationships between Island and Mainland Mayfly (*Baetis*) Populations" Northwestern College Spring Board Poster Presentation Session, 2009.

Tolsma, S.S. Genetic Technologies: Christians Learning and Dialoging Together. American Reformed Church, September-November 2010.

Tolsma, S.S., "Individuals and Families Caring for the Environment: Putting Biblical Principles into Practice", Sioux County Creation Care Workshop. November 2010.

Tolsma, S.S., "The Creation and Use of Human Embryonic Stem Cells", Northwestern College Lilly Grant presentation. December 2010.

## **Honors and**

Trainee, NRSA Biochemistry, Molecular Biology, and Cell Biology Training Grant, Northwestern University, (1990-1993).

## **Awards**

National Student Research Forum, Northwestern University student representative, 1994.

Gramm Travel Fellowship Award, Robert Lurie Cancer Center, Northwestern University, 1994.

Northwestern College Teaching Excellence Award finalist, 2001; recipient, 2015.

Sabbatical leave awarded for 2003/2004 academic year.

## **Community and Church Service**

Member, American Reformed Church, Orange City, IA (Adult Sunday School teacher, liturgist, BLAST teacher, Middle School Youth Group leader, High School Youth Group Leader, Co-chair Senior Pastor Search Committee, Discipleship Commission, Creation Care Coordinator, SERVE team member, Elder), 1996-present.

Member, Orange City Tulip Festival Steering Committee, 1996-1998.

Member, Orange City Day Care Center Board of Directors, 1997-2003.

Member, Christian Action Commission, Reformed Church in America, 1999-2005.

"European Travelogue", Landsmeer Ridge Community, October 2007.

"European Travelogue", Orange City Lyon's Club, December, 2007.

Elder delegate and Advisory Group Moderator to General Synod. 2012, 2013.

Synod blogger. June 2012. <http://heraldblog.squarespace.com/sara-tolsma/>

Member, New Brunswick Theological Seminary Board of Directors, 2007-2014.

Member, Sioux County Environmental Initiative Steering Committee, 2008-present.

Member, Perspectives: A Journal of Reformed Thought Board of Editors, 2012 – present. Book review editor 2013-2015. Co-editor 2015 – present.

**Professional Memberships**

Iowa Academy of Science. 1996-present.

Chair, Societal Issues Committee for the Iowa Academy of Science. 2009-2011.

American Scientific Affiliation. 2010-present. Subject book review editor (biology, genetics, evolution, ecology) 2014-present.

International Society of Nurses in Genetics (iSONG). 2014-present. Member, Education Committee 2014-present. Abstract reviewer for annual conference 2015.

**Personal**

Husband/Spouse:  
Jeff Tolsma, SPHR  
Vice President, Business Support  
GELITA North America

Children:  
Ellen Christina Tolsma – 25 years  
Joseph Stanten Tolsma – 21 years  
Daniel Jeffrey Tolsma – 17 years