
Curriculum Vitae

NAME David F. J. Tees, Ph.D.	POSITION TITLE <ul style="list-style-type: none"> • Associate Professor of Physics, Ohio University. • Adjunct Member of the Graduate Faculty in Chemical & Biomolecular Engineering, Ohio U. • Adjunct Member of the Graduate Faculty in Biomedical Engineering, Ohio U.
ADDRESS Department of Physics & Astronomy, 251A Clippinger Labs, Ohio University, Athens, OH 45701	CONTACT INFORMATION Tel: (740) 593-1694 Fax: (740) 593-0433 E-mail: tees@ohio.edu Web: http://www.phy.ohiou.edu/~tees

Education and Training

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
McGill University, Montreal, Canada	B.Sc.	1986	Physics
McGill University, Montreal, Canada	M.Sc.	1989	Atmospheric Physics
McGill University, Montreal, Canada	Ph.D.	1996	Physics (Biophysics)
Cornell University, Ithaca, NY	Post Doc	12/95-8/96	Chemical Engineering
University of Pennsylvania, Philadelphia, PA	Post Doc	9/96-10/00	Chemical Engineering

Positions and honors

Professional Experience

08/1986 – 08/1989	Graduate Research Assistant – M. Sc. McGill University, Montreal, QC, Canada. Thesis: Range dependence of radar estimates of rainfall: a simulation. (supervisor: Geoffrey L. Austin)
08/1989 – 11/1995	Graduate Research Assistant – Ph.D. McGill University, Montreal, QC, Canada. Thesis: On the time and force dependence of antigen-antibody mediated cell adhesion. (supervisor: Harry L. Goldsmith)
12/1995 – 08/1996	Postdoctoral Researcher Chemical Engineering, Cornell University, Ithaca, NY, U.S.A. Research on the force dependence of reverse reaction rates for selectin-carbohydrate bonds. (supervisor: Daniel A. Hammer)
08/1996 – 10/2000	Postdoctoral Researcher Chemical Engineering, University of Pennsylvania, Philadelphia, PA Research on the force dependence of reverse reaction rates for selectin-carbohydrate bonds (supervisor: Daniel A. Hammer)
10/2000 – 09/2001	Research Associate Chemical Engineering, University of Pennsylvania, Philadelphia, PA Research on biophysics of cell adhesion. (supervisor: Daniel A. Hammer)
09/2001 – 08/2007	Assistant Professor of Physics Ohio University, Athens, OH
01/2003 – present	Adjunct Professor of Chemical and Biomolecular Engineering Ohio University, Athens, OH
09/2007 – present	Associate Professor of Physics Ohio University, Athens, OH

Honors

July, 1995 – **Whitaker Foundation Travel Award** from the North American Society of Biorheology for travel to 9th International Conference of Biorheology in Big Sky, Montana.

1997-1999 – **Postdoctoral fellowship** from Quebec research funding agency **Fonds pour la Formation de Chercheurs et l'Aide à la Recherche (FCAR)**.

2005 – Ohio University Arts and Sciences Dean's Outstanding Teacher Award

2005-2006 – American Heart Association Ohio Valley Affiliate Beginning Grant in Aid Recipient

2006-2012 – National Science Foundation **CAREER Award** Recipient

Funding**Current:**

National Science Foundation/National Cancer Institute CBET-1106118, Co-PI (with Monica Burdick, PI), \$499,996, August, 2011 – July, 2016, *Cancer stem cell phenotyping: Establishing correlations and regulatory crosstalk between molecular markers and mechanical/rheological properties.*

National Science Foundation BES-0547165, CAREER Award, PI, \$400,000, July, 2006 – June, 2011 (with no cost extensions to June 2016), *CAREER: Leukocyte Adhesion and Mechanical Arrest in a Model Capillary.*

Previous:

American Heart Association Ohio Valley Affiliate 0465268B, Beginning Grant in Aid, PI, \$121,000, July 2004-June 2006, *Leukocyte Adhesion & Mechanical Arrest in a Micropipette.*

National Science Foundation CBET-1039869, Co-PI (with Douglas J. Goetz, Ohio University, PI) \$400,000. August, 2010 - September, 2013, *MRI: Acquisition of a Fluorescence Activated Cell Sorter for Research and Training at Ohio University.*

Ohio University Biomimetic Nanoscience and Nanotechnology (BNNT) program. Co-PI (with Ido Braslavsky) *Development of a Biophysics Lab Course*, \$100,000, March, 2006-(with no cost extension) March, 2012

Ohio University Biomimetic Nanoscience and Nanotechnology (BNNT) program. Co-PI (with Marcia Kieliszewski), \$6900, July 2009 – June, 2010, *Defining the Interactions that Drive Hydroxyproline-rich Glycoprotein Self-Assembly using Single Molecule Forced Unbinding.*

Courses**Ohio University (Evaluations on scale of 1 to 5 with 5 the best)**

(courses with enrollment below 10 for undergrad or 6 for graduate are not evaluated)

Quarter	Evaluation	Course
Spring 2017	4.12	PHYS 2051 – General Physics (calculus level) mechanics, thermo
Fall 2016	4.54	PHYS 1901 – Physics Seminar
Spring 2016	4.22	PHYS 2051 – General Physics (calculus level) mechanics, thermo
Fall 2015	4.30	PHYS 1901 – Physics Seminar
Fall 2015	4.30	PHYS 4301/5301 – Cell & Molecular Biophysics
Spring 2015	3.63	PHYS 2051 – General Physics (calculus level) mechanics, thermo
Fall 2014	4.75	PHYS 1901 – Physics Seminar
Spring 2014	4.22	PHYS 2051 – General Physics (calculus level) mechanics, thermo
Fall 2013	4.83	PHYS 4301/5301 – Cell & Molecular Biophysics
Fall 2013	4.49	PHYS 1901 – Physics Seminar
Spring 2013	3.86	PHYS 2001 – Introductory Physics: mechanics, oscillations, thermo
Fall 2012	-	PHYS 1901 – Physics Seminar

Transition to Semesters

Spring 2012	4.64	PHYS 601 – Graduate Laboratory
Winter 2012	-	PHYS 298T – Tutorial in Introductory Physics
Fall 2011	4.61	PHYS 210 – Physics Seminar
Spring 2011	4.70	PHYS 461/561 – Cell & Molecular Biophysics
Spring 2010	-	PHYS 372 – Junior Laboratory—Photons
Winter 2010	4.57	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Fall 2009	-	PHYS 601 – Graduate Laboratory
Spring 2009	4.15	PHYS 203 – Introductory Physics: optics, modern physics
Winter 2009	4.49	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Fall 2008	5.00	PHYS 461/561 – Cell & Molecular Biophysics
Spring 2008	4.69	PHYS 299T – Tutorial in Introductory Physics
Winter 2008	4.69	PHYS 201 – Introductory Physics: mechanics, fluids
Fall 2007	4.88	PHYS 601 – Graduate Laboratory
Winter 2007	4.54	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Fall 2006	5.00	PHYS 461/561 – Cell & Molecular Biophysics
Spring 2006:	4.91	PHYS 200 Labs – Introductory Physics lab supervision
Winter 2006:	4.58	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Fall 2005:	4.15	PHYS 201 – Introductory Physics: mechanics, fluids
Spring 2005:	-	PHYS 299T – Tutorial in Introductory Physics
Winter 2005:	4.25	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Fall 2004:	4.80	PHYS 461/561 – Cell & Molecular Biophysics: New course
Spring 2004:	4.77	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Winter 2004:	4.40	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Fall 2003:	4.31	PHYS 201 – Introductory Physics: mechanics, fluids
Spring 2003:	3.44	PHYS 202 – Introductory Physics: oscillations, waves, E&M, thermo
Winter 2003:	4.87	PHYS 262 – Introductory Physics with Biological Applications
Fall 2002:	4.80	PHYS 469/569 – Cell & Molecular Biophysics: Experimental course
Spring 2002:	-	PHYS 299T – Tutorial in Introductory Physics
Winter 2002:	3.68	PHYS 201 – Introductory Physics: mechanics, fluids

Pre-Ohio University

Instructor, University of Pennsylvania: CHE 410 – Chemical Engineering senior Unit Operation laboratory – Fall, 1999 & 2000

Students Supervised**Graduate Students:**

Pooja Chopra, M.S. (thesis), Physics & Astronomy. Fabrication of multi-parallel microfluidic devices for investigating mechanical properties of cancer cells. Completed: June 2016.

Saroj Dhakal, M.S. (project), Physics & Astronomy. Development of particle tracking and edge detection methods for high throughput analysis of cell deformation in microfluidic devices. Completed Apr. 2016.

Ameneh Mohammadalipour Ph.D., Physics & Astronomy. Mechanical properties of cancer cells: A possible biomarker for stemness. Completed: Jan. 2015.

Yang Liu, Ph.D., Physics & Astronomy. Measurement of force dependence of receptor-ligand bonding using a novel forced unbinding system. Completed: Dec. 2014

Aaron Burdette, M.S., Biomedical Engineering. Fabrication and utilization of microfluidic devices to study mechanical properties of BT-20 and Hs 578T human breast cancer cells. Completed: Aug. 2014. Now service representative for Fisher Scientific.

Young-Eun Choi, Ph.D., Physics & Astronomy. Mechanical deformation and adhesion of cells in model capillaries. Completed: Nov. 2011. Now Medical Physicist working in Korea.

Prithu Sundd, Ph.D., Chemical Engineering: Leukocyte adhesion in receptor-coated micropipettes as a model of adhesion in capillaries. Completed: November, 2007. Now Assistant Professor at University of Pittsburgh.

Anand Pai, M.S. (thesis), Chemical Engineering: Microrheological assessment of neutrophil mechanical properties following adhesion in a model capillary. Completed: Aug. 2006.

Undergraduate Summer Students:

Brandon Niese, Summer 2016 and HTC thesis: Development of microfluidic devices and video analysis of cell deformation.

Jacob Hartman, Summer 2014 and 2015: Development of microfluidic devices and video analysis of cell deformation.

Derek Miller, Summer 2013. Calibration and development of optical tweezer system for use in measuring cell mechanical properties.

Aaron Burdette, Summer 2011 and 2012. Quantifying neutrophil activation time with calcium release.

Robert Harrington, Summer 2010. Development of Fura-2 calcium sensing microscopy system for measuring cell activation.

Anna Opitz, Summer 2010 and HTC Thesis: Development of a chromokinesin system for use in optical tweezer-based processivity assays (completed: November 2010).

Steven Rogers, Summer, 2007 and 2008: Neutrophil activation in small micropipettes (Supported by Provost's Undergraduate Research Fund).

Joel Smith, Summer, 2006: Adhesion in tapering micropipettes.

Nick Malise, Summer, 2003: Characterization of pulled optical fiber microcantilevers.

Jessica Benson, Summer, 2002: Development of systems for pulled optical fiber microcantilevers.

Special Study Graduate Students:

Sulaiman Kareem, 2004-2007. Worked on single molecule forced unbinding of adhesive glycoproteins from the plant cell wall.

Vasile-Iulian Clapa, 2004-2005: Development of quadrant photodiode systems (Now at Wesleyan University, CT).

Tariq Ali, 2003-2004: Developed pulled optical fiber microcantilever systems for single molecule biophysics research. (Now has passed comps at SUNY Buffalo, NY)

James Zuber, 2003: Developed quadrant photodiode systems

Timur Skeini, 2002-2004: Developed lab automation components and quadrant photodiode systems. (Now working with Dr. S.W. Hla, Ohio University)

Membership in Graduate Thesis Committees:

Zakia Alhashem, Ph.D. Physics & Astronomy; supervisor: A. Smith. Molecular Beam Epitaxy Growth, Spin-Polarized Scanning Tunneling Microscopy and Electron Energy Loss Spectroscopy Studies of Magnetic and Nitride Systems (in progress: January 2017)

Parthiban Rajan, Ph.D. Electrical Engineering & Computer Science; supervisor: S. Kaya. Sensor Enriched Microfluidic Devices for Biomedical Applications (in progress: December 2016)

Tang Tang, Ph.D. Chemistry & Biochemistry; supervisor: J. Holub. Monitoring Ligand-Mediated Estrogen Receptor Dimerization Using Bipartite Tetracysteine Display (in progress: November 2016)

Thushan Wickramasinghe, Ph.D. Physics & Astronomy; supervisor: E. Stinaff. Optical Studies and Manipulation of Semiconductor Nanostructure Quantum Dot Molecules (in progress: May 2016)

Sai Teja Pusuluri, Ph.D. Physics & Astronomy; supervisor: H. Castillo. Exploring complex energy landscapes and their use in modeling biological systems (in progress: April 2016)

Tung Nguyen, Ph.D. Physics & Astronomy; supervisor: P. Jung. Computational Modeling of Slow Neurofilament Transport along Axon (in progress: April 2016)

Grady Carlson, Ph.D., Chemical & Biomolecular Engineering; supervisor: M. Burdick. The Epithelial-to-Mesenchymal Transition Regulates the E-selectin Ligand Activities of Breast Cancer Cells (Completed: October 2016)

Eric Martin, Ph.D. Chemical & Biomolecular Engineering; supervisor: M. Burdick. Dynamic Biochemical Tissue Analysis (DBTA) of Novel P-Selectin Ligands Expressed by Colon Cancer (BME MS Thesis: November 2015; ongoing)

Shamim Akhtar, Ph.D., Physics & Astronomy; supervisor: C. Brune. Study of the $^{12}\text{C}(\alpha,\gamma)^{16}\text{O}$ Reaction via the α -Transfer Reactions: $^{12}\text{C}(6\text{Li,d})^{16}\text{O}$ and $^{12}\text{C}(7\text{Li,t})^{16}\text{O}$ (Completed: August 2016)

Chris Johnson, Ph.D., Physics & Astronomy; supervisor: P. Jung. Computer simulation of slow axonal transport of neurofilaments (Completed: December 2015)

Rami Amro, Ph.D., Physics & Astronomy; supervisor: A. Neiman. Computer simulation of slow axonal transport of neurofilaments (Completed: May 2015)

Yinyun Li, Ph.D., Physics & Astronomy; supervisor: P. Jung. Computer simulation of slow axonal transport of neurofilaments (Completed: May 2013)

Hoi Nguyen, Ph.D., Physics & Astronomy; supervisor: A. Neiman. Spontaneous dynamics and information transfer in sensory neurons. (Completed: July 2012)

Venktesh S. Shirure, Ph.D., Chemical & Biomolecular Engineering, M. Burdick. Shear dependent molecular mechanisms of cell adhesion in breast cancer metastatic model (Completed: December 2012)

Divya Swaminathan, Ph.D., Physics & Astronomy; supervisor: P. Jung. Mathematical modeling of intracellular calcium signaling: A study of IP₃ receptor models (Completed: August 2010)

Chinna M. Kummitha, Ph.D., Chemical & Biomolecular Engineering; supervisor: D. Goetz. Applied Molecular Recognition of HECA-452 and Wnt5a in Pathological Inflammation. (Completed: February 2010)

Sudhir Deosarkar, Ph.D., Chemical & Biomolecular Engineering; supervisor: D. Goetz. Development of novel therapeutic and diagnostic approaches for atherosclerosis. (Completed: February 2010)

Yeliz Celik, Ph.D., Physics & Astronomy; supervisor: I. Braslavsky. Hyperactive antifreeze proteins and their interactions with ice crystals. (Completed: December 2009)

Xiaoyan Zou, Ph.D., Chemical Engineering; supervisor: D. Goetz. Neutrophil adhesion in flow. (Completed: October, 2008)

Tesfaye A. Abtew, Ph.D., Physics & Astronomy; supervisor: D. Drabold. Topics in the electronic structure of amorphous semiconductors (Completed: June, 2007)

John A. Means, Ph.D., Biochemistry; supervisor: J. Hines. Characterization of binding and structural aspects of the Bacillus subtilis antiterminator bulge/tRNA complex using fluorescence and NMR. (Completed: September, 2007)

Ghanim Ullah, Ph.D., Physics & Astronomy; supervisor: P. Jung. Computational modeling of calcium signaling from the nanoscale to multicellular systems (Ph.D. completed June, 2006)

Harsh Pratap, M.S., Chemical Engineering; supervisor: D. Goetz. Effect of Cytokines on TLR-4 Expression in Endothelial Cells. (M.S. completed March, 2006)

Douglas Wylie, M.S., Physics & Astronomy; supervisor: I. Braslavsky. Evidence for DNA oxidation in single molecule fluorescence studies. (M.S. completed November, 2005)

Harshad S. Sakhalkar, Ph.D., Chemical Engineering; supervisor: Doug Goetz, Targeting biodegradable particles to select segments of the endothelium in vitro and in vivo. (Ph.D. completed September, 2005)

Shangyou Zeng, Ph.D., Physics & Astronomy; supervisor: P. Jung. Spatial organization of ion channels and neuronal function. (Ph.D. complete February, 2005)

Hazel Tan, Ph.D., Chemistry; supervisor: Greg van Patten, Growth of polyelectrolyte multilayer structures. (Not completed due to student's death)

Deependra Kantha, M.S. Physics & Astronomy; supervisor: J. Heremans, Hydrodynamic pumping of a quantum Fermi liquid in a semiconductor heterostructure. (M.S. completed August, 2002)

Service

Professional

American Heart Association Bioengineering and Biosciences 4 panel (member: 2007-present; co-chair: 2013-present; chair: 2015-present)

Reviewer of over 40 papers for Annals of Biomedical Engineering, Biophysical Journal, Biorheology, Physical Review E, Physical Review Letters, Langmuir, and Mathematical Biosciences, and grants for the National Science Foundation (panelist), American Heart Association (Biotechnology panelist), South Carolina DEPSCoR/IDeA Program and Singapore Biomedical Research Council.

University Service:

Faculty Senator: Sept 2014 – July 2017.

EPSA (Educational Policy and Student Affairs Committee): member Sept 2014 – July 2017.

UCC (University Curriculum Committee): member Sept 2014 – present.

ICC (Individual Course Committee): member Sept 2014 – present.

College of Arts & Sciences Promotion & Tenure committees (ad hoc member of ~7 committees since 2008)

College of Arts & Sciences Research Advisory Committee (2008-2010)

College of Arts & Sciences Five Year Review Committee for Center for Intelligent Chemical Instrumentation (2008 - member and 2013 - chair)

Departmental Service:

Undergraduate Chair: Physics & Astronomy: Sept 2011 – present.

Chair's Advisory Committee: Sept 2011 – present.

Director of Studies: Honors Tutorial College Engineering Physics program: June 2005 – present.

Undergraduate Curriculum Committee: member 2005-present; chair 2006-2010

2005 World Year of Physics planning committee (member): 2004-2005

PHYS 200 level textbook selection committee (member): 2003-2004

Engineering Physics ad-hoc committee to develop new curriculum (member): 2002-2005

Colloquium committee (member): 2002-2004

Futures Committee (member): 2002-2003

Search committees:

Experimental Nuclear Physics faculty search committee (member) 2012-2013

Experimental Nuclear Physics faculty search committee (member) 2007-2008

Experimental Condensed Matter faculty search committee (member) 2006-2007

Biophysics NFI faculty search committee (consultant) 2002-2003

Nanoscience faculty search committee (member) 2002-2003

Interdisciplinary Math/Physics/BIOS faculty search committee (member) 2001-2002

Science Fair and Poster Judging:

Judge for CMSS/NQPI poster competition, Ohio University: 11/2/2006, 11/2/2007

Judge at Ohio University Student Research and Creative Activities Fair, 5/12/2005, 5/4/2006, 5/3/2007, 5/14/2008, 5/14/2009, 5/13/2011.

Judge at Ohio State Science Day, Ohio State University: 5/11/2002, 5/3/2003, 5/8/2004, 5/7/2005, 5/4/2006, 5/6/2006, 5/6/2007, 5/10/2008, 5/9/2009, 5/8/2010, 5/7/2011, 5/5/2012, 5/11/2013, 5/10/2014, 5/16/2015, 5/14/2016, 5/13/2017.

Judge at Ohio District 12 Regional Science Day, 3/2/2002, 3/8/2003, 3/6/2004, 3/5/2005, 3/4/2006, 3/3/2007, 3/7/2009, 3/6/2010, 3/5/2011, 3/10/2012, 3/16/2013, 3/15, 2014, 3/14/2015, 3/12/2016, 3/18/2017.

Department Outreach:

Did demonstrations on Optical Tweezers for **Physics & Astronomy Open House**, November 3, 2007, November 2, 2009, November 5, 2011 and October 19, 2013, November 7, 2015.

Ohio University Science Café presentation “Pushing, Pulling and Squeezing: Physics and Cell Adhesion” on October 23, 2013

Did demonstration on Micromanipulation with Laser Tweezers for Young Scholars Ohio, May 2, 2011 and September 30, 2013.

Gave presentation on Nanobiophysics for **Morrison Elementary School Science Day**, March 31, 2006

Helped to organize and served as demonstrator (interacting with the public and advising graduate students on dealing with the public) on both days at **Open House for World Year of Physics**, November 4-5, 2005.

Led question and answer session for World Year of Physics event on **The Physics of Star Trek**, April 8, 2005.

Did formal demonstrations of Brownian motion for World Year of Physics **visit by Wellston Middle School**, March 21, 2005.

Performed demonstrations in fluid mechanics, sound & magnetism for four of John King’s classes of kindergarten and 1st grade students at **West Elementary School**, Athens on July 24, 2003.

Professional Activities

Member of Biomedical Engineering Society (1997 to present)

Member of Biophysical Society (2002 to present)

Member of American Physical Society (2003 to present)

Member of American Chemical Society (1998 to present)

Member of American Association for the Advancement of Science (1996 to present)

Member of American Association for Cancer Research (2011 to present)

Reviewer of over 40 papers for Annals of Biomedical Engineering, Biophysical Journal, Biorheology, Physical Review E, Physical Review Letters, Langmuir, and Mathematical Biosciences, and grants for the National Science Foundation (panelist), American Heart Association (Biotechnology panelist), South Carolina DEPSCoR/IDeA Program and Singapore Biomedical Research Council.

Peer-Reviewed Publications

A. Burdette, P. Chopra, M.M. Burdick, and D.F.J. Tees. Comparison of rheological measures of stiffness for stem-like vs non-stem like human breast cancer cells using a microfluidic channel. In preparation for submission to Cellular and Molecular Bioengineering.

Y.-E. Choi, V.S. Shirure, M.M. Burdick, and **D.F.J. Tees**. Micropipette analysis of Young's modulus for stem-like and non-stem-like breast cancer cell lines. *Submitted to Physical Biology*.

Y.-E. Choi, D.J. Goetz, and **D.F.J. Tees**. Dynamics and lubrication gap width of neutrophil adhesion in a non-tapering model capillary. *Manuscript in preparation for Biochemical and Biophysical Research Communications*.

Prithu Sundd, Douglas J. Goetz, and **D.F.J. Tees**. Transient Adhesion of Neutrophils on P-selectin in Pulmonary Capillary-Sized Microvessels *in Vitro*. *In revision following submission to American Journal of Physiology—Cellular Physiology*.

A. Mohammadalipour, M.M. Burdick, and **D.F.J. Tees**. Deformability of breast cancer cells in correlation with surface markers and cell rolling. Submitted for publication.

A. Mohammadalipour, M.M. Burdick, and **D.F.J. Tees**. Viscoelasticity measurements reveal rheological differences between stem-like and non-stem-like breast cancer cells. *Cellular and Molecular Bioengineering*, 10(3):235-248. June 2017.

DOI: <http://dx.doi.org/10.1007/s12195-017-0485-8>

Venktesh S. Shirure, Tiantian Liu, Luis F. Delgadillo, Chaz M. Cuckler, **David F. J. Tees**, Fabian Benencia, Douglas J. Goetz, and Monica M. Burdick. CD44 variant isoforms expressed by breast cancer cells are functional E-selectin ligands under flow conditions. *American Journal of Physiology - Cell Physiology*, 308(1):C68-C78, January 1, 2015.

DOI: <http://dx.doi.org/10.1152/ajpcell.00094.2014>

Monica M. Burdick, Karissa A. Henson, Luis F. Delgadillo, Young Eun Choi, Douglas J. Goetz, **David F.J. Tees**, and Fabian Benencia. Expression of E-selectin ligands on circulating tumor cells: cross-regulation with cancer stem cell regulatory pathways? *Frontiers in Oncology*. 2:103, 2012. DOI: <http://dx.doi.org/10.3389/fonc.2012.00103>

China Malakondaiah Kummitha, Venkatesh S. Shirure, Luis F. Delgadillo, Sudhir P. Deosarkar, **David F.J. Tees**, Monica M. Burdick, and Douglas J. Goetz. HECA-452 is a non-function blocking antibody for isolated sialyl Lewisx adhesion to endothelial expressed E-selectin under flow conditions. *Journal of Immunological Methods*. 384:43–50, 2012.

<http://dx.doi.org/10.1016/j.jim.2012.07.003>

Anand Pai, Prithu Sundd, and **D.F.J. Tees**. In situ microrheological determination of neutrophil stiffening following adhesion in a model capillary. *Annals of Biomedical Engineering*, 36(4):596-603, 2008. DOI: <http://dx.doi.org/10.1007/s10439-008-9437-8>

Sundd, P., X. Zou, D.J. Goetz, and **D.F.J. Tees**. Leukocyte adhesion in capillary-sized, P-selectin-coated micropipettes. *Microcirculation*, 15(2):109-122, 2008 (Published online Nov. 2007). DOI: <http://dx.doi.org/10.1080/10739680701412971>

Tees, D.F.J., Prithu Sundd, and Douglas J. Goetz. A Flow Chamber for Capillary Networks: Leukocyte adhesion in capillary-sized, ligand-coated micropipettes *in* “Principles of Cellular

Engineering: Understanding the Biomolecular Interface”, Michael R. King, ed., Elsevier, New York, 213-231, 2006.

X. Zou, V.R. Shinde Patil, N.M. Dagia, L.A. Smith, M.J. Wargo, K. A. Interliggi, Christopher M. Lloyd, **D.F.J. Tees**, B. Walcheck, M.B. Lawrence, and D.J. Goetz. PSGL-1 derived from human neutrophils is high-efficiency ligand for endothelial-expressed E-selectin under flow. *American Journal of Physiology—Cell Physiology*. 209:C415-C424, 2005.

DOI: <http://dx.doi.org/10.1152/ajpcell.00289.2004>

Tees, D.F.J. and D.J. Goetz. Leukocyte adhesion: An exquisite balance of hydrodynamic and molecular forces. *News in Physiological Sciences*, 18:186-190, 2003. Invited by Dr. Neil Granger (LSU). DOI: <http://dx.doi.org/10.1152/nips.01444.2003>

Tees, D.F.J., K.-C. Chang, S. D. Rodgers, and D. A. Hammer. Simulation of cell adhesion to bioreactive surfaces in shear: the effect of cell size. *Industrial and Engineering Chemistry Research* 41:486-493, 2002. DOI: <http://dx.doi.org/10.1021/ie010383p>

Tees, D.F.J., J.T. Woodward, and D.A. Hammer. Reliability theory for receptor-ligand bond dissociation. *Journal of Chemical Physics*, 114:7483-7496, 2001.

DOI: <http://dx.doi.org/10.1063/1.1356030>

Tees, D.F.J., R.E. Waugh, and D.A. Hammer. A microcantilever device to assess the effect of force on the lifetime of selectin-carbohydrate bonds. *Biophysical Journal*, 80:668-682, 2001.

DOI: [https://doi.org/10.1016/S0006-3495\(01\)76047-X](https://doi.org/10.1016/S0006-3495(01)76047-X)

Chang, K.-C., **Tees, D.F.J.**, and D.A. Hammer. The state diagram for cell adhesion under flow: leukocyte rolling and firm adhesion. *Proceedings of the National Academy of Sciences U.S.A.*, 97:11262-11267, 2000. Paper received an “Editor’s Choice” notice in Science (290:235, 2000).

DOI: <http://dx.doi.org/10.1073/pnas.200240897>

Long, M., H.L. Goldsmith, **D.F.J. Tees**, and C. Zhu. Probabilistic modeling of shear-induced formation and breakage of doublets cross-linked by receptor-ligand bonds. *Biophysical Journal*, 76:1112-1128, 1999. DOI: [https://doi.org/10.1016/S0006-3495\(99\)77276-0](https://doi.org/10.1016/S0006-3495(99)77276-0)

Tees, D.F.J., and H.L. Goldsmith. Kinetics and locus of failure of receptor-ligand mediated adhesion between latex spheres. I. Protein-carbohydrate bond. *Biophysical Journal*, 71:1102-1114, 1996. DOI: [https://doi.org/10.1016/S0006-3495\(96\)79312-8](https://doi.org/10.1016/S0006-3495(96)79312-8)

Kwong, D., **D.F.J. Tees**, and H.L. Goldsmith. Kinetics and locus of failure of receptor-ligand mediated adhesion between latex spheres. II. Protein-protein bond. *Biophysical Journal*, 71:1115-1122, 1996. DOI: [https://doi.org/10.1016/S0006-3495\(96\)79313-X](https://doi.org/10.1016/S0006-3495(96)79313-X)

Tees, D.F.J., O. Coenen and H.L. Goldsmith. Interaction forces between red cells agglutinated by antibody. IV. Time and force dependence of break-up. *Biophysical Journal*, 65(3):1318-1334, September 1993. DOI: [https://doi.org/10.1016/S0006-3495\(93\)81180-9](https://doi.org/10.1016/S0006-3495(93)81180-9)

Fabry, F., G.L. Austin and **D. Tees**. The accuracy of rainfall estimates by radar as a function of range. *Quarterly Journal of the Royal Meteorological Society*, 118:435-453, 1992.

DOI: <https://doi.org/10.1002/qj.49711850503>

Non-Peer-Reviewed Publications

D.F.J. Tees, P. Sundd, Y.E. Choi, D.J. Goetz, A. Pai and S. Rogers. Neutrophil motion, adhesion and activation in an *in vitro* micropipette model of a lung capillary. Proceedings of the 3rd Joint US-European Fluids Engineering Summer Meeting and 8th International Conference on Nanochannels, Microchannels and Minichannels. August 1-5, 2010, Montreal, Canada. FEDSM-ICNMM2010-30177, 11 pages.

Goldsmith, H.L., S.P. Tha, and **D.F.J. Tees**. Red blood cell aggregation by monoclonal antibodies. In: *Hémorhéologie et agrégation érythrocytaire. Applications cliniques*. (J.F. Stoltz, ed.) Editions Médicales Internationales, Cachan, France, 1994. pp. 5-12.

Goldsmith, H.L., K. Takamura, S. Tha and **D. Tees**. Study of cell-cell interactions with the travelling microtubule. In: “*Studying Cell Adhesion*”, (P. Bongrand, P. Claesson and A. Curtis, eds.) Springer Verlag, Heidelberg, New York, 1994, pp. 141-156.

Invited Conference Presentations

(Keynote talk) Tees, D., Sundd, P., Choi, Y., Goetz, D., Pai, A., Rogers, S. Neutrophil motion, adhesion and activation in an *in vitro* micropipette model of a lung capillary. 8th International Conference on Nanochannels, Microchannels and Minichannels, American Society of Mechanical Engineers, Montreal, Canada, August 2010.

D. Tees, Y.C. Choi, P. Sundd, and Douglas J. Goetz. Neutrophil motion, adhesion and activation in an *in vitro* micropipette model of a lung capillary. Society of Rheology meeting. Madison, WI, October 2009.

Tees, D.F.J. The Nanoscale Biophysics of Micrometer-scale Cell Adhesion. March Meeting of the American Physical Society, Montreal, QC, Canada. March, 2004.

Tees, D.F.J., J.T. Woodward, and D.A. Hammer. The effect of multivalency on estimation of Bell model parameters for bond dissociation rates from forced unbinding assays. 3rd Virginia Colloquium on Biomechanics of Cell Adhesion, Charlottesville, VA. July, 2002.

Tees, D.F. J. Molecular Mechanics of E-selectin/Sialyl LewisX Recognition Evaluated by a Microcantilever Device, 2nd Virginia Colloquium on Biomechanics of Cell Adhesion, Charlottesville, VA. June, 2001

Tees, D.F.J. Adhésion leucocytaire. Journées scientifiques, U. de Nancy, Nancy, France. November, 1999

Tees D.F.J., R.E. Waugh, D.A. Hammer. Force dependence of E-selectin/sialyl-Lewis^x single bond dissociation. Annual meeting of the Biomedical Engineering Society, Atlanta, GA. October, 1999

Tees, D.F.J., R.E. Waugh, K.-C. Chang, and D.A. Hammer. Dependence of E-selectin/sialyl Lewis^x reverse reaction rates on applied force. Annual meeting of the Biomedical Engineering Society, Cleveland, OH. October, 1998. Published in *Annals of Biomedical Engineering* 26:S-29, 1997.

Tees, D.F.J., K.-C. Chang, R.E. Waugh, and D. A. Hammer. Measurement of the force dependence of E-selectin/sialyl Lewis^x reverse reaction rates using a microcantilever technique.

American Chemical Society Symposium on Microscopy Techniques in Bio-Interfacial Science, Boston, MA. August, 1998.

Tees, D.F.J. and D. A. Hammer. Predicting cell adhesive behavior from the force dependence of receptor-ligand reaction rates. Third annual Delaware Valley Soft Materials Symposium, Philadelphia, PA. May, 1998.

Invited Seminars

Department of Biomedical Engineering, Ohio State University, November, 2013

Department of Physics & Astronomy, Ball State University, September, 2011

Department of Chemical & Biomolecular Engineering, Ohio University, October, 2007

Department of Physics & Astronomy, Miami University, September, 2007

Department of Plant Biology, Ohio State University, October, 2005

Department of Chemical Engineering, Ohio University, Athens, OH, May, 2002

Department of Physics, University of Cincinnati, Cincinnati, OH, November, 2001

National Institute of Standards & Technology, Gaithersburg, MD, August, 2001

Department of Physics & Astronomy, Ohio University, Athens, OH, June, 2001

Department of Physics, Dalhousie University, Halifax, NS, May, 2001

Department of Bioengineering, University of California, San Diego, CA, April, 2001

Department of Physics, University of Alberta, Edmonton, AB, March, 2001

Department of Chemical Engineering, University of Maryland, College Park, MD, March, 2001

Department of Physics, University of Illinois at Chicago, Chicago, IL, February, 2001

Department of Chemical Engineering, University of Florida, Gainesville, FL, February, 2001

Department of Chemical Engineering, McMaster University, Hamilton, ON, February, 2001

Department of Biophysics, State University of New York, Buffalo, NY, January, 2001

Inst. of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, ON, June, 2000.

Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI, May, 2000.

Department of Physics, University of Waterloo, Waterloo, ON, March, 2000.

Department of Chemical Engineering, University of Oklahoma, Norman, OK, February, 2000.

Department of Physics, Drexel University, Philadelphia, PA, April, 1999.

Department of Physics, Villanova University, Villanova, PA, November, 1998.

Conference Abstracts

Mohammadalipour, A., Burdick, M.M. & Tees, D.F.J. (2015, April 20). Whole-cell and local viscoelasticity of stem-like and non-stem-like breast cancer cells. Poster presented at the Annual Meeting of the American Association for Cancer Research, Philadelphia, PA.

Mohammadalipour, A., Benencia, F., Burdick, M.M. & Tees, D.F.J. (2014, April 6). Elasticity of stem-like and non-stem-like breast cancer cells studied by micropipette aspiration technique. Poster presented at the Annual Meeting of the American Association for Cancer Research, San Diego, CA. This poster was also presented at the Ohio University Research and Creativity Expo.

Tees, D.F.J., Mohammadalipour, A., Benencia, F., Burdick, M.M. (2013, April 18). Mechanical properties of cancer cells: A possible biomarker for stemness. Poster presented at the Physical Sciences in Oncology (PS-OC) conference, Scottsdale, AZ.

Mohammadalipour, A., Benencia, F., Burdick, M.M. & Tees, D.F.J. (2013, April 9). Mechanical properties of cancer cells: A possible biomarker for stemness. Poster presented at the Annual Meeting of the American Association for Cancer Research, Washington, DC.

Mohammadalipour, A., Benencia, F., Burdick, M.M. & Tees, D.F.J. (2013, March 30). Mechanical properties of cancer cells: A possible biomarker for stemness, Oral presentation at the Ohio Section of the American Physical Society conference, Athens, OH.

Mohammadalipour, A., Benencia, F., Burdick, M.M. & Tees, D.F.J. (2012, October 30). Mechanical Properties of Cancer Cells: A Possible Biomarker for Stemness. Poster presented at the Biomedical Society Annual Meeting, Atlanta, GA.

Choi, Y.E., P. Sundd, and **D.F.J. Tees**. The Effect of P-selectin and ICAM-1 on Neutrophil Motion in an In Vitro Model of a Lung Capillary, Experimental Biology Conference, Washington, DC. April, 2011.

Choi, Y.E., P. Sundd, S. Rogers, D. Goetz, and **D.F.J. Tees**. Neutrophil motion, adhesion and activation in an *in vitro* micropipette model of a lung capillary. Annual meeting of the Biomedical Engineering Society, Pittsburgh, PA. October, 2009.

Rogers, S. and **D.F.J. Tees**, Determining the time for activation of mechanically deformed neutrophils using the Calcium sensitive dye Fura 2. Annual meeting of the Biomedical Engineering Society, St. Louis, MO. October, 2008.

Choi, Y.E., P. Sundd, D. Goetz and **D. Tees**, Neutrophil Motion on P-Selectin/ICAM-1 in an In Vitro Model of a Lung Capillary. Annual meeting of the Biomedical Engineering Society, St. Louis, MO. October, 2008.

Sundd, P., Y.E. Choi, D.J. Goetz, and **D.F.J. Tees**, Neutrophil motion on P-selectin/ICAM-1 in an in vitro model of a lung capillary. 13th International Congress of Biorheology. Pennsylvania State University, State College, PA. July 2008. Abstract published in *Biorheology*, 45:126-126, 2008.

Tees, D.F.J, P. Sundd and D.J. Goetz, Neutrophil motion on P-selectin/ICAM-1 in an in vitro model of a lung capillary. Experimental Biology 2008, San Diego, CA. April, 2008.

Sundd, P., D.J. Goetz, and **D.F.J. Tees**, Neutrophil adhesion to P-selectin/ICAM-1 in an in vitro model of a lung capillary, Experimental Biology 2007, Washington, DC. April-May, 2007.

Pai, A. and **D.F.J. Tees**, Micro-rheological assessment of neutrophil mechanical properties in adhesion in a model capillary, Experimental Biology Conference, Washington, DC. April-May, 2007.

Sundd, P., D.J. Goetz, and **D.F.J. Tees**, Neutrophil adhesion in P-selectin/ICAM-1 coated, capillary-sized glass microvessels, Annual meeting of the Biomedical Engineering Society, Chicago, IL. October, 2006.

Pai, A. and **D.F.J. Tees**, Micro-rheological assessment of neutrophil mechanical properties following adhesion in a model capillary, Annual meeting of the Biomedical Engineering Society, Chicago, IL. October, 2006.

Kareem, S., L. Tan, J. Qian, M. Kieliszewski and **D.F.J. Tees**. Forced unbinding of Hydroxyproline-rich Glycoproteins. Annual meeting of the Biomedical Engineering Society, Chicago, IL. October, 2006.

Kareem S., L. Tan, J. Qian, M. Kieliszewski and **David F. J. Tees**. Defining interactions for Hydroxyproline-rich Glycoproteins using single molecule forced unbinding. Ohio Nanosummit, Columbus Ohio, April 4-5, 2006

Sundd, P., X. Zou, D.J. Goetz, and **D.F.J. Tees**. Leukocyte firm adhesion in capillary-sized, selectin coated micropipettes, Annual meeting of the American Institute of Chemical Engineers, Cincinnati, OH. November, 2005. *[This poster has also been shown at the Ohio University Student Research Day on May 4, 2006, where it won **first prize** in its category, and at the Department of Chemical and Biomolecular Engineering Board of Advisors Poster Session on April 22, 2006, where it also won **first prize**.]*

Sundd, P., D.J. Goetz, and **D.F.J. Tees**. Cyclic migratory behavior of neutrophils in selectin coated capillary-sized micropipettes, Annual meeting of the American Institute of Chemical Engineers, Cincinnati, OH. November, 2005.

Sundd, P., X. Zou, D.J. Goetz, and **D.F.J. Tees**, Leukocyte firm adhesion in capillary-sized, selectin coated micropipettes, Annual meeting of the Biomedical Engineering Society, Baltimore, MD. September, 2005.

Sundd, P., D.J. Goetz, and **D.F.J. Tees**, Cyclic migratory behavior of neutrophils in selectin coated capillary-sized micropipettes, Annual meeting of the Biomedical Engineering Society, Baltimore, MD. September, 2005.

Tees, D.F.J., L. Tan, S. Kareem, J. Qian and M. Kieliszewski. Defining interactions for Hydroxyproline-rich Glycoproteins using single molecule forced unbinding, Annual meeting of the Biomedical Engineering Society, Baltimore, MD. September, 2005.

Sundd, P., X. Zou, D.J. Goetz, and **D.F.J. Tees**, Leukocyte adhesion in capillary-sized, ligand-coated micropipettes. Research and Creative Activity Fair, Ohio University, Athens, OH. May, 2005.

Tees, D.F.J., D.F.J., S. Kareem, and V.-I. Clapa. Forced unbinding of single bioadhesion molecules using a microcantilever device, Ohio Nanotechnology Summit, Dayton, OH. February 2005.

Sundd, P., X. Zou, D.J. Goetz, and **D.F.J. Tees**. Leukocyte adhesion in capillary-sized, ligand-coated micropipettes. Annual meeting of the Biomedical Engineering Society, Philadelphia, PA. October, 2004.

Tees, D.F.J., P. Sundd, X. Zou and D.J. Goetz. Leukocyte adhesion in capillary-sized, ligand-coated micropipettes. Experimental Biology 2004, Washington, DC. April, 2004.

Sundd, P., X. Zou, D.J. Goetz, and **D.F.J. Tees**. Cancer cell adhesion and mechanical plugging in adhesion molecule-coated micropipettes. Annual meeting of the Biomedical Engineering Society, Nashville, TN. October, 2003.

Tees, D.F.J. and D.A. Hammer, Molecular mechanics and multivalency of E-selectin /sialyl Lewis^x recognition evaluated using a microcantilever device, Keystone symposium on Molecular Mechanisms of Leukocyte Trafficking, Steamboat Springs, CO. April, 2002.

Tees, D.F.J., J.T. Woodward and D.A. Hammer. Systematic Errors in Estimation of Bell Model Parameters for Receptor-Ligand Bond Dissociation from Forced Unbinding Assays. Spring meeting of the American Chemical Society, San Diego, CA. April, 2001.

Tees, D.F.J. and D.A. Hammer. Calculation and simulation of parameter estimation for receptor-ligand bond dissociation. Annual meeting of the Biomedical Engineering Society, Seattle, WA. October, 2000. Published in *Annals of Biomedical Engineering*, 28 (supl. 1):S92, 2000.

Tees, D.F.J., R.E. Waugh, K.-C. Chang, and D.A. Hammer Measurement of the force dependence of E-selectin/sialyl Lewis^x reverse reaction rates. Annual meeting of the American Institute of Chemical Engineers, Miami, FL. November, 1998.

Goldsmith, H.L., **D.F.J. Tees**, M. Long and C. Zhu. Modeling of formation and breakage of receptor-ligand bonds in shear flow. 45th annual conference of the Microcirculatory Society, San Francisco, CA. Published in *FASEB J.* 12:A35, 1998. April, 1998.

Tees, D.F.J., R.E. Waugh and D.A. Hammer. Measurement of the dependence of E-selectin/sialyl Lewis^x reverse reaction rates on loading rate and magnitude of applied force. Keystone symposium on Molecular Mechanisms of Leukocyte Trafficking, Incline Village, NV. March, 1998. **Abstract selected for short presentation (10 chosen out of ~100 abstracts).**

Goldsmith, H.L., **D.F.J. Tees**, M. Long and C. Zhu. Modeling of formation and breakage of receptor-ligand bonds in shear flow. Annual meeting of the Biomedical Engineering Society, San Diego, CA. November, 1997. Published in *Annals of Biomedical Engineering*, 25:S-33, 1997.

Goldsmith, H.L., **D.F.J. Tees** and D. Kwong. Time and force dependence of the shear-induced rupture of antigen-antibody bonds. 12th International Congress on Rheology, Quebec City, QC. August, 1996.

Goldsmith, H.L., **D.F.J. Tees** and D. Kwong. Time and force dependence of the shear-induced rupture of receptor-ligand bonds. 70th Colloid and Surface Science Symposium, Clarkson University, Potsdam, NY. June, 1996.

Goldsmith, H.L., **D.F.J. Tees** and D. Kwong. Kinetics of receptor-ligand mediated adhesion of latex spheres. 43rd annual conference of the Microcirculatory Society, Washington, DC. April, 1996. Published in *Microcirculation*, 3:87, 1996.

Tees, D.F.J. and H. L. Goldsmith. The time and force dependence of separation of antibody agglutinated sphered red cells compared with that of blood group antigen-coupled microspheres. 9th International Congress of Biorheology/ 2nd International Congress on Clinical Hemorheology, Big Sky, MT. July, 1995. Published in *Biorheology*, 32:280, 1995.

Tees, D.F.J. and H. L. Goldsmith. Time and force dependence of separation of blood group B antigen-coupled microspheres cross-linked by monoclonal antibody. 42nd annual conference of the Microcirculatory Society, Atlanta, GA. April, 1995. Published in *Microcirculation*, 2:75, 1995.

Tees, D. and H.L. Goldsmith. Time and force dependence of separation of red cells agglutinated by monoclonal antibody. Gordon Conference on the Biorheology of Cell Adhesion, Henniker, NH. June, 1993. **Abstract selected for short presentation (7 chosen out of ~30 abstracts).**

Goldsmith, H.L. and **D. Tees**. Break-up of RBC aggregates: studies of the stochastic nature of receptor-ligand bonds. Conference on Recent Developments in Structured Continua III, Montreal, QC. May, 1993.

Tees, D. and H.L. Goldsmith. Stochastic nature of the interaction force between human red cells linked by monoclonal antibody. 34th annual meeting of Canadian Federation of Biological Societies, Queen's University, Kingston, ON. June, 1991.