



CURRICULUM VITAE

PERSONAL

Full Name Douglas William Strand
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EDUCATION

B.S., 2001, Biology
Liberty University, Lynchburg, VA
4 year academic honors scholarship

Ph.D., 2007, Molecular and Cellular Biology
Baylor College of Medicine, Houston, TX; Laboratory of Dr. David Rowley
Thesis: TGF β /FGF-2 Signaling in Prostate Cancer Reactive Stroma

Postdoctoral Fellow 2007-2013, Department of Urologic Surgery
Vanderbilt University, Nashville, TN; Laboratory of Dr. Simon Hayward

Research Assistant Professor 2013-2014, Department of Urologic Surgery
Major interest: Metabolic regulation of urologic diseases

Honors and awards

1997-2001 4-year Honors program scholarship
2001 Most Outstanding Honors Thesis
2006 Travel Award for SBUR meeting
2006 3rd place Poster Award BCM Graduate student symposium
2007 2nd place Poster Award BCM Graduate student symposium
2009-2011 DOD Postdoctoral training award
2010-2012 NIH Loan repayment program award
2010,2013 StarBrite VICTR awards
2012 Travel Award, Podium presentation for SBUR meeting
2013 Travel Award for AUA meeting
2015 Best Reviewer Journal of Urology
2016 UTSW Center for Translational Medicine award
2018 CAIRIBU meeting best prostate poster

Professional Societies and Public Advisory Committees

2009-	Member, SBUR
2014-	Peer reviewer for multiple journals including Journal of Endocrinology, Cytometry A, Urology Gold, Journal of Biochemical and Molecular Toxicology, Urology, Prostate, BMC Urology, JOVE, Molecular Biology Reports, Cell Reports, Differentiation, Experimental Cell Research
2016-	Member, AUA
2016-	Ad hoc reviewer for Prostate Cancer Foundation UK
2018-	Reviewer for NIDDK
2018-	Member, GenitoUrinary Development Molecular Anatomy Project (GUDMAP)
2020-	Member, Human BioMolecular Atlas Project (HUBMAP)
2020-	Member, Human Cell Atlas (HCA)
2021-	Reviewer for AUA Research scholar grants

Major Accomplishments

Graduate Student, 2001-2007

- Developed genetically engineered stromal cells to study the molecular control of stromal-epithelial interactions in prostate cancer progression (see publications 1 and 2)
- Developed transgenic mouse to study effect of TGF-beta expression on prostate homeostasis (see publication 3)

Postdoctoral Fellow, 2007-2014

- Developed novel *in vivo* and *in vitro* tissue recombination techniques for the study of metabolism in cellular differentiation and potential by leveraging collaborations with Engineering, Diabetes and Obesity departments (see publications 4-6)
- Performed a molecular characterization of symptomatic BPH after collating a cohort of over 150 patients with full clinical annotation by leveraging collaborations with surgeons and pathologists after procuring independent financial support (see publications 7-10)
- Trained and mentored high school, college and medical school students as well as clinical fellows

Assistant Professor, 2014-2021

- Building a human prostate tissue and data biorepository (currently over 400 patients with matching clinical data and over 90 young organ donors) to study the cellular origins of heterogeneous BPH phenotypes (see publications 11 and 12 and review 1)
- Built a cellular atlas of the normal human and mouse prostate using single cell RNA sequencing; built experimental tools to identify and isolate each cell type by flow cytometry. Data hosted at <https://strandlab.net/sc.data/> for public access. (see publication 13)
- Building a cellular atlas of the normal and diseased mouse and human bladder to study the consequences of bladder detrusor dysfunction as a source of lower urinary tract symptoms
- Member of the Genetics, Development and Disease (GDD) and Cancer Biology graduate programs
- Member of GUDMAP
- Director of Urology WIPs program
- Mentor for STARS program at UTSW
- UTSW graduate program admissions committee

Associate Professor, 2021-current

- Using single cell and spatial transcriptomics to understanding the molecular basis of specific phenotypes in lower urinary tract dysfunction (see publications 14-16, review 2)
- Member of Human Cell Atlas
- Member of Human Biomolecular Atlas Project
- Director at Large for SBUR

Selected Publications

1. Yang F*, **Strand DW***, Rowley DR. Fibroblast Growth Factor 2 mediates Transforming Growth Factor beta Action in Prostate Cancer Reactive Stroma. *Oncogene*. 2008 Jan 17;27(4):450-9. PMID: 17637743 (*denotes equal authorship)
2. **Strand DW**, Liang YY, Yang F, Barron DA, Ressler SJ, Schauer IG, Feng XH, Rowley DR. TGF- β induction of FGF-2 expression in stromal cells requires integrated smad3 and MAPK pathways. *Amer Journal of Clin and Exper Urol*. 2014 2(3):239-48. PMC4219310
3. Barron DA*, **Strand DW***, Ressler SJ, Dang TD, Ayala GE, Ittmann M, Rowley DR. TGF β 1 Induces an Age-Dependent Inflammation of Nerve Ganglia and Fibroplasia in the Prostate Gland Stroma of a Novel Transgenic Mouse. *PLoS One*. 2010 Oct 29;5(10):e13751. PMCID: PMC2966419 (*denotes equal authorship)
4. Jiang M, **Strand DW**, Fernandez S, He Y, Yi Y, Birbach A, Schmid J, Qiu QC, Tang DG, Hayward SW. Functional Remodeling of Benign Human Prostatic Tissues *in vivo* by spontaneously immortalized progenitor and intermediate cells. *Stem Cells*. 2010 Feb 28(2):344-56. PMCID: PMC2962907
5. **Strand DW**, Jiang M, Murphy TA, Yi Y, Konvinse KC, Franco OE, Wang Y, Young JD, Hayward SW. PPAR γ Isoforms Differentially Regulate Metabolic Pathways to Mediate Mouse Prostatic Epithelial Differentiation. *Cell Death and Disease* 2012 Aug 9;3:e361. PMCID: PMC3434663
6. **Strand DW***, DeGraff DA*, Jiang M, Sameni M, Franco OE, Love HD, Hayward WJ, Lin-Tsai O, Wang AY, Cates JM, Sloane BF, Matusik RJ, Hayward SW. Deficiency in Metabolic Regulators PPAR γ and PTEN Cooperates to Drive Keratinizing Squamous Metaplasia in Novel Models of Human Tissue Regeneration. *Am J Path* 2013 Feb; 182(2):449-59. PMCID: PMC3562729 (denotes equal authorship)
7. Lin-Tsai O, Clark PE, Miller NL, Fowke JH, Hameed O, Hayward SW, **Strand DW**. Surgical Intervention for Symptomatic Benign Prostatic Hyperplasia is Correlated with Expression of the AP-1 Transcription Factor Network. *Prostate*. 2014 Feb 5 Epub PMID: 24500928
8. Austin D, **Strand DW**, Love HL, Franco OE, Hameed O, Clark PE, Fowke JH, Matusik RJ, Jin RJ, Hayward SW. NF- κ B and androgen receptor variant expression correlated with human BPH progression. 2016. *The Prostate*. 76(5):491-511. PMC4763342
9. Austin D, **Strand DW**, Love HL, Franco OE, Grabowska MM, Miller NL, Hameed O, Clark PE, Matusik RJ, Jin RJ, Hayward SW. NF- κ B and androgen receptor variant 7 induce expression of SRD5A isoforms and confer 5ARI resistance. 2016. *The Prostate*. 76(11):1004-18. PMC4912960
10. **Strand DW**, Aaron L, Henry G, Franco OE, Hayward SW. Isolation and analysis of discrete human prostate cellular populations. 2016. *Differentiation*. 91(4-5):139-51. PMC4854811
11. Henry GH, Malewska A, Mauck RJ, Gahan JC, Hutchinson R, Torrealba J, Francis F, Roehrborn CG, **Strand DW**. Molecular pathogenesis of human prostate basal cell hyperplasia. *Prostate* 2017; 77(13):1344-55. PMID: 28795417
12. Henry G, Loof N, **Strand DW**. OMIP-40: Optimized gating of human prostate cellular subpopulations. *Cytometry A*. 2017 Aug 18. PMID:28834328
13. Henry GH, Malewska A, Joseph DB, Malladi VS, Lee J, Torrealba J, Mauck RJ, Gahan JC, Raj GV, Roehrborn CG, Hon GC, MacConmara MP, Reese JC, Hutchinson RC, Vezina CM, **Strand DW**. A

cellular anatomy of the normal adult human prostate and prostatic urethra. *Cell Reports*. 2018 Dec 18;25(12):3530-42. PMID: 30566875

14. Joseph DB, Henry GH, Malewska A, Iqbal NS, Ruetten HM, Turco AE, Abler LL, Sandhu SK, LA, Vezina CM, **Strand DW**. Urethral luminal epithelia are castration-insensitive cells of the proximal prostate. *The Prostate*. 2020. Jun 4. Doi: 10.1002/pros.24020. PMID: 32497356
15. Joseph DB, Henry GH, Malewska A, Reese JC, Mauck RJ, Gahan JC, Hutchinson RC, Venkat SM, Roehrborn CG, Vezina CM, **Strand DW** (2021). Single-cell Analysis of Mouse and Human Prostate Reveals Novel Fibroblasts with Specialized Distribution and Microenvironment Interactions. *J Pathol*. 2021 Jun 26 [online ahead of print]; PMID: 34173975; PMC8429220; NIHMS1717909; Doi: 10.1002/path.5751.
16. Joseph DB, Henry GH, Malewska A, Reese JC, Mauck RJ, Gahan JC, Hutchinson RC, Mohler J, Roehrborn CG, **Strand DW** (2021). 5 Alpha Reductase Inhibitors Induce a Prostate Luminal to Club Cell Transition in Human BPH. *J Pathol*. 2021 Dec 20. Doi: 10.1002/path.5857. PMID: 34928497.
17. Dai JC, Morgan TN, Goueli R, Parrott D, Kenigsberg A, Mauck RJ, Roehrborn CG, **Strand DW**, Costa DN, Gahan JC. MRI Features Associated with Histology of Benign Prostatic Hyperplasia Nodules: Generation of a Predictive Model. *J Endourol*. 2022 Mar;36(3):381-386. doi: 10.1089/end.2021.0397. Epub 2022 Feb 28. PMID: 34549591; PMCID: PMC8972022.
18. Jia L, **Strand DW**, Goueli RS, Gahan JC, Roehrborn CG, Mauck RJ. PSA density is associated with BPH cellular composition. *Prostate*. 2022 Jun 2. doi: 10.1002/pros.24367. Epub ahead of print. PMID: 35652548.

Reviews

1. **Strand DW**, Costa DN, Francis F, Ricke WA, Roehrborn CG. Targeting phenotypic heterogeneity in benign prostatic hyperplasia. *Differentiation*. 2017 Aug 4;96:49-61. PMID: 28800482
2. Joseph DB, Turco AE, Vezina CM, **Strand DW** (2020). Progenitors in Prostate Development and Disease. *Dev Biol*. 2021 May;473:50-58. PMID: 33529704; PMC7987809; Doi: 10.1016/j.ydbio.2020.11.012.

Book Chapters

1. Roehrborn CG, **Strand DW**. Campbell-Walsh-Wein Urology. 144 Benign Prostatic Hyperplasia: Etiology, Pathophysiology, Epidemiology, and Natural History. 2020

Educational Materials

1. **Strand DW**. (2018). Unfunded to Funded: A 12 step program. E-education course, module 4 of 4 in the course, "Writing a Successful Career Development Award Application," posted in AUA University at <https://auau.auanet.org/content/writing-successful-career-development-award-application-2018#group-tabs-node-course-default1>.

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/douglas.strand.1/bibliography/public/>

RESEARCH SUPPORT

Active

1R01 DK115477-01

Strand (PI)

7/20/18-5/31/23

Notch-mediated 5ARI-resistance in human BPH

This project aims to determine whether inhibiting Notch signaling sensitizes nodular BPH to 5ARI treatment.

Role: Principal Investigator

R01 CA245294-01 Mani (PI) 9/1/19 – 8/31/24
NIH-NCI
3D genome architecture and the origins of recurrent genomic rearrangements in prostate cancer
The major goals of this project are to uncover the origins of genomic rearrangements in prostate cancer
Role: Co-Investigator

U54 DK104310 Ricke (PI) 12/1/19 – 11/30/24
UNIVERSITY OF WISCONSIN - MADISON/NIH-NIDDK
Cellular and molecular mediators of fibrosis in the development of urinary tract dysfunction: Project 2
This project aims to determine the role of SRD5A2+ peri-urethral fibroblasts in BPH/LUTS
Role: Co-Investigator

U54 DK104310 – Convergence Award Strand (PI) 08/1/21 – 07/31/23
UNIVERSITY OF WISCONSIN - MADISON/NIH-NIDDK
Spatial Transcriptomics of the Lower Urinary Tract
This project aims to optimize the use of spatial transcriptomics in BPH/LUTS
Role: Principal Investigator

R01 Xin (PI) 7/1/20 – 6/30/25
UNIVERSITY OF WASHINGTON/NIH-NIDDK
Molecular mechanisms of initiation of benign prostatic hyperplasia
This project aims to determine the role of proximal fibroblasts in stimulating proximal epithelial progenitors to expand
Role: Co-Investigator

R01 Jerde (PI) 4/1/20 – 3/31/25
INDIANA UNIVERSITY SCHOOL OF MEDICINE/NIH-NIDDK
Interleukin-1 and Steroid Signaling Drive Toxoplasma-induced Prostatic Hyperplasia
This project aims to determine the role of Toxoplasma gondii in prostate inflammation and growth
Role: Co-Investigator

13455SC Huang (PI) 12/1/21-11/30/24
Chan Zuckerberg initiative/UCSF
A Prostate Cell Atlas Across Ancestries
This project aims to determine the molecular differences among cell types of the prostate in different races of men
Role: Co-Investigator

Completed Research Support Completed During the Last Three Years

CPRIT RP170152 Bagrodia (PI) 12/01/16 – 11/30/20
Targeting the HNF4A and WNT/Beta-Catenin Pathways in Childhood Malignant Yolk Sac Tumors
This project aims to determine the impact of HNF4A and WNT/beta-catenin signaling on the gene expression program and oncogenic potential of malignant yolk sac tumors.
Role: Co-Investigator

Lectures

6/22/2022	Wisconsin O'Brien symp	A Cellular Etiology of Human BPH
5/6/2022	AUA meeting	5ARI-induced Lineage Plasticity in Human BPH
4/29/2022	CNC retreat UTSW	The power of controls in urologic cancer
4/28/2022	Duke Kure Symp	A cellular anatomy of the female urethra
3/29/2022	NIH LUTS thinktank	A cellular anatomy of BPH: will it change clinical practice?
10/20/2021	Columbia O'Brien symp	Prostate Progenitors: A Case of Mistaken Identities
9/17/2021	UMinn grand rounds	Prostate Progenitors: A Case of Mistaken Identities

8/8/2021	GUDMAP jamboree	A comparative cellular anatomy of the prostate
7/8/2021	GUDMAP month meeting	Combining single cell and spatial transcriptomics to derive the cellular pathogenesis of bladder cancer
1/28/2021	CRepHS symposium	A Cellular anatomy of the lower urinary tract
7/2/2020	PCF journal club	Urethral Luminal epithelia are castration independent cells of the proximal prostate
5/26/2020	GUDMAP month meeting	Building a Cellular Anatomy of the Human and Mouse Prostate
3/4/2020	NorthShore P20 meeting	Building a Cellular Anatomy of Human Prostate Disease
2/27/2020	Mineral Metabolism	Building a Cellular Anatomy of Human Prostate Disease
12/5/2019	CAIRIBU meeting	Single Cell RNA sequencing for cell discovery
10/24/2019	PCF meeting	Proximal epithelia are increased in prostate cancer, but are they progenitors?
10/12/2019	AUA ECIW	Establishing effective career development goals and translation to your training plan
5/5/2019	AUA meeting	A cellular anatomy of BPH
5/4/2019	AUA meeting	Characterizing the cellular anatomy of human BPH with single cell RNA sequencing
4/23/2019	GUDMAP annual meeting	Comparing the human and mouse prostate and prostatic urethra at single cell resolution
4/12/2019	Wisconsin O'Brien Center	Ring around the urethra: Do SRD5A2+ fibroblasts cause LUTS?
4/12/2019	Wisconsin O'Brien Center	Characterizing the cellular anatomy of human BPH with single cell RNA sequencing
3/22/2019	Purdue Cancer Center	Benign Prostatic Hyperplasia: Solving an anatomical puzzle with single cell RNA sequencing
2/8/2019	Sherry Group Zinc meeting	Anatomical differences between mouse and human prostate
12/13/2018	CAIRIBU meeting	Cellular pathogenesis of human BPH
11/11/2018	SBUR 2018	Cellular pathogenesis of benign prostatic hyperplasia
11/10/2018	SBUR 2018	A cellular anatomy of the normal human prostate and BPH
10/30/2018	Southwest Transplant	Research update
10/12/2018	AUA ECIW lecture	Starting a lab as a junior investigator
10/12/2018	AUA ECIW lecture	Establishing effective career development goals and translation to your training plan
9/11/2018	Reproductive Biol sem	A cellular anatomy of the normal and diseased human prostate
7/13/2018	McDermott Center WIP	Creating a cellular anatomy of the human prostate
5/24/2018	GUDMAP annual meeting	Defining the cellular anatomy of the normal human prostate
4/20/2018	Wisconsin O'Brien Center	Defining the cellular anatomy of the normal human prostate
4/10/2018	Southwest Transplant Alliance	Research update
10/22/2017	Southwest Transplant Alliance	Research update
5/13/2017	AUA session moderator	Cell of origin in prostate cancer
3/31/2017	Southwest Transplant Alliance	Research update
8/8/2016	Indiana University	Molecular and Cellular Pathogeneses of BPH
11/10/2015	Urology grand rounds (UTSW)	Translational research for BPH
11/8/2015	SBUR	Cell specific responses to comorbidities in BPH

List of trainees

Graduate student at Baylor College of Medicine

2006- Edgar Gonzalez – summer program for college students, now Judge Advocate Officer for the U.S. Coast Guard in Washington, D.C.

2006- Vanessa Salazar – summer program for high school students, now accountant at the Texas Workforce Commission in Houston, TX

Postdoctoral Fellow at Vanderbilt University

2012- Tiffany Khaw – summer program for high school students, now research intern at University of Pennsylvania School of Medicine

2012- Anne Wang – summer program for college students, now at Lewis Katz School of Medicine at Temple University

2013- Opal Reddy – 1 year research rotation for medical students, residency at UCLA pathology, now Transfusion Medicine Fellow at NIH Clinical Center in Washington, D.C.

Professor at UT Southwestern Medical Center

2019 Caitlin McAlanis – summer program for high school students

2019-21 Diya Binoy Joseph – postdoctoral fellow, now faculty at InStem

2019- Ramy Goueli – female pelvic medicine and reconstructive surgery fellow, now UTSW faculty

2019- Niccolo Passoni – pediatric urology fellow, now at Texas Children's Hospital

2022 Nikitha Thoduguli – summer program for high school students