

Curriculum Vitae

Last Updated: 03/26/2021

PERSONAL DATA

Name: Kenneth I. Aston, Ph.D.
Birth Place: Salt Lake City, UT
Citizenship: United States

EDUCATION

<u>Years</u>	<u>Degree</u>	<u>Institution (Area of Study)</u>
2007 - 2011	Postdoctoral Fellow	University of Utah, Andrology and IVF Laboratories Salt Lake City, UT
2000 - 2007	Ph.D.	Utah State University (Animal Science: Reproductive Physiology) Logan, UT
1996 - 2000	B.S.	Utah State University (Biology, minors in Chemistry and Spanish) Logan, UT
1993 - 1994		Utah State University (Biology, minors in Chemistry and Spanish) Logan, UT

BOARD CERTIFICATIONS

06/01/2012 - Present American Board of Bioanalysis, Certified - does not expire

UNIVERSITY OF UTAH ACADEMIC HISTORY

Surgery (Urology), 05/04/2011 - Present

05/04/2011 Assistant Professor
07/01/2016 Associate Professor

PROFESSIONAL EXPERIENCE

Full-Time Positions

2016 - Present Associate Professor of Surgery (Urology), University of Utah School of Medicine,
Salt Lake City, UT
2011 - 2016 Assistant Professor of Surgery (Urology), University of Utah School of Medicine,
Salt Lake City, UT

Part-Time Positions

2010 Adjunct Faculty Instructor of Biology, Salt Lake Community College, Salt Lake
City, UT

Editorial Experience

2018 - Present Editorial Board for Fertility & Sterility
2016 - Present Editorial Board for Andrology

Reviewer Experience

Abstract Reviewer for the 74th American Society for Reproductive Medicine Scientific Congress & Expo, Philadelphia, PA, Oct 12-16.

Grant Reviewer, Fanconi Anemia Research Fund

Reviewer for Andrology

Reviewer for Antioxidants

Reviewer for BMC Medical Genetics

Reviewer for Biology of Reproduction

Reviewer for Clinical Epigenetics

Reviewer for FASEB

Reviewer for Genetics in Medicine

Reviewer for Human Fertility

Reviewer for Human Reproduction

Reviewer for Journal of Assisted Reproduction and Genetics

Reviewer for PLOS Genetics

Reviewer for Systems Biology in Reproductive Medicine

Abstract Reviewer for American Urology Association Annual Meeting AUA2018, San Francisco, CA, May 18-21

Reviewer for Abstracts submitted to the American Society of Reproductive Medicine annual meeting

Reviewer for Abstracts submitted to the Society for the Study of Reproduction annual meeting

Reviewer for Asian Journal of Andrology

SCHOLASTIC HONORS

2021	American Society for Reproductive Medicine. 2021 STAR Award
2020 - Present	American Society for Reproductive Medicine. 2020 STAR Award
2018	Recognition of outstanding service and commitment as an exemplary reviewer for Fertility and Sterility, at the American Society for Reproductive Medicine Scientific Congress and Expo, Denver, CO, Oct 6-10.
2018	American Society for Reproductive Medicine. 2018 STAR Award
2018	AJA Outstanding Reviewer Award, Asian Journal of Andrology
2017	2nd Place Prize Poster "Population-based semen analysis result and fertility among men with inflammatory bowel disease: Results from Subfertility Health Assisted Reproduction and the Environment (SHARE) study, at the Utah Chapter Meeting of the American College of Surgeons, Salt Lake City, May 11.
2013	Illumina Exome Sequencing Pilot Award, Microarray and Genomic Analysis Core Facility, Huntsman Cancer Institute award of exome analysis of 4 samples for the study: Identification of genomic variants responsible for sperm defects leading to fertilization failure in vitro: a family based study.
2012	University of Utah Andrology Top Published Paper Award for: "Genome-wide sperm deoxyribonucleic acid methylation is altered in some men with abnormal chromatin packaging or poor in vitro fertilization embryogenesis."

2010	SMRU Award at ASRM Annual Meeting for: "A novel deletion on Yq11.221 is associated with severe oligozoospermia and azoospermia."
2010	University of Utah Andrology Top Published Paper Award for: "Evaluation of 172 candidate polymorphisms for association with oligozoospermia or azoospermia in a large cohort of men of European descent."
2009	University of Utah Andrology Top Published Paper Award for: "Genome-wide study of single nucleotide polymorphisms associated with azoospermia and severe oligozoospermia."
2007	Utah State University Graduate Student Senate stipend enhancement award
2006	Second place presenter USU Graduate Student Symposium, for: "Global gene expression analysis of bovine somatic cell nuclear transfer blastocysts and cotyledons."
2002 - 2007	AAAS Program for Excellence in Science Recipient
2002 - 2007	Utah State University Graduate Teaching Assistantship
2001 - 2002	Utah State University Research Assistantship

ADMINISTRATIVE EXPERIENCE

Administrative Duties

2020 - Present	Andrology & IVF Laboratories Director, University of Utah School of Medicine
2016 - Present	Andrology Laboratory Director, University of Utah South Jordan Health Center, South Jordan, Utah
2011 - Present	Manager, Fertility Preservation Program, University of Utah School of Medicine, Department of Surgery, Division of Urology: Andrology & IVF Laboratories
2011 - Present	Andrology & IVF Research Lab Manager, University of Utah, Salt Lake City, UT
2011 - Present	Manager, Reproductive Research Repository, Andrology & IVF Laboratories, University of Utah, Salt Lake City, UT

Professional Organization & Scientific Activities

2019	Committee Member, American Society for Reproductive Medicine, 2019 Prize Poster Committee - The Scientific Congress of the American Society for Reproductive Medicine, ASRM 2019, October 12-16, Philadelphia, PA.
2018 - Present	Steering Committee Member, International Male Infertility Genomics Consortium
2018 - Present	Official CAP Inspector, College of American Pathologists/American College of Medical Genetics and Genomics, High Complexity Laboratory
2011 - Present	Active Member, ABB

Grant Review Committee/Study Section

2019	Grant Reviewer, French National Agency
2016	National Institute on Drug Abuse (NIDA)'s Exploring Epigenomic or Non-Coding RNA Regulation in HIV/AIDS and Substance Abuse (R01) Study Section
2015	Reviewer, Italian Telethon Foundation
2015	Reviewer, Israel Science Foundation

Symposium/Meeting Chair/Coordinator

2019 - 2021 Member Program Organizing Committee, Satellite Symposium of the Joined Congress of the European Academy of Andrology and the International Society of Andrology, Muenster, Germany, Dec, 2020.

UNIVERSITY COMMUNITY ACTIVITIES

University Level

2015 - 2016 Committee Member, Academic Senate, The Committee confers with and from a broad, university-wide perspective, advises directors of the Marriott Library, the Eccles Health Sciences Library, and the S.J. Quinney Law Library concerning library policies and practices including matters of operational policies, the development of existing holdings, and the expansion of existing facilities.

College Level

2015 - 2016 Evaluator, School of Medicine Admissions Review Committee, Will conduct one-on-one interview and meet with groups of applicants for the 2019 class.

Division Level

2018 - Present Interviewer, Urology, Men's Health Fellowship
2016 - Present Interviewer, Reproductive Endocrinology, Fellowship
2014 - Present Interviewer, Urology, Resident Interviews

Programs, Centers & Institutes

2012 - Present Member, University of Utah Center on Aging
2011 - Present Facilitator, Huntsman Cancer Institute, Fertility Preservation Program, Salt Lake City, UT

SERVICE AT PREVIOUS INSTITUTIONS

2004 - 2005 Senator, Utah State University, Graduate Student Senate, Logan UT

CURRENT MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Society for Reproductive Medicine
American Society of Andrology

FUNDING

Past Grants

04/20/18 - 09/30/18 Sperm sample preparation for point of care applications
Principal Investigator(s): Kenneth I. Aston
Direct Costs: \$173,508 Total Costs: \$223,823
Eunice Kennedy Shriver National Institute of Child Health and Human Development
Role: Co-Principal Investigator

- 02/24/15 - 01/31/18 Transgenerational Effects of Smoking-Induced Changes to Sperm DNA Methylation. (R01)
Principal Investigator(s): Kenneth I. Aston
Direct Costs: \$207,500 Total Costs: \$309,175
Eunice Kennedy Shriver National Institute of Child Health and Human Development
Role: Principal Investigator
- 09/01/14 - 05/30/19 Genomics Of Spermatogenic Impairment (R01)
Principal Investigator(s): Kenneth I. Aston
Direct Costs: \$480,661 Total Costs: \$716,185
Role: Principal Investigator
- 01/01/13 - 12/31/13 Microarray analysis of age related changes in sperm DNA methylation
Principal Investigator(s): Kenneth I. Aston
Direct Costs: \$19,450 Total Costs: \$19,450
University of Utah Center on Aging
Role: Principal Investigator
- 07/01/12 - 12/31/13 Development of an assay to measure the frequency of germline microsatellite mutation and its application to the study of sperm mutation rates in infertile men and controls
Principal Investigator(s): Kenneth I. Aston
Direct Costs: \$29,500 Total Costs: \$29,500
University of Utah Research Foundation Seed Grant
Role: Principal Investigator

Clinical Studies

- 2011 - Present IRB 00039652 Leukocyte and sperm telomere length as a biomarker of human aging and fertility
- 2011 - Present IRB 00055330 Development of an assay to measure the frequency of germline microsatellite mutations and its application to the study of sperm mutation rates in infertile men and controls
- 2011 - Present IRB 00055975 Study of the maternal and paternal contributions to offspring telomere length
- 2011 - Present IRB 00058021 Prospective randomized study of the effect of sperm selection techniques on intracytoplasmic sperm injection (ICSI) outcome
- 2011 - Present IRB 00060464 The effect of aging on sperm DNA methylation
- 2011 - Present IRB 00009178 Screening for mutations in the spermatogenesis-specific genes of men with severe male-factor infertility
- 2011 - Present IRB 00012049 Banking of male reproductive tissues for future research in fertility

TEACHING RESPONSIBILITIES/ASSIGNMENTS

Clinical Teaching

- 2012 - Present Fertility Preservation - Huntsman Cancer Institute, Nurses and Mid-level Practitioners, University of Utah, Salt Lake City, UT
- 2012 Fertility Preservation - Information and Options for Cancer Patients, an informational pamphlet published for distribution in the community

Small Group Teaching

- 2011 - Present Coordinate Monthly Research Journal Club, University of Utah School of Medicine, Department of Surgery, Division of Urology: Andrology & IVF Laboratories
- 2011 - Present Coordinate Monthly Clinical Journal Club, University of Utah School of Medicine, Department of Surgery, Division of Urology: Andrology & IVF Laboratories

Trainee Supervision

Fellow

- 2021 Advisor/Mentor, Jessica Elizabeth Torres Arce, University of Utah
- 2018 Advisor/Mentor, Viviane Paiva Santana, University of Utah
- 2018 - 2020 Advisor/Mentor, Albert Salas-Hueots, University of Utah

Medical Student

- 2012 Supervisor, Drew Durtschi, summer research rotation

Undergraduate

- 2015 Advisor/Mentor, Julia Malone, University of Wisconsin, Madison, Research Intern
- 2015 Advisor/Mentor, Emma James, University of Wisconsin, River Falls, Summer Research Intern
- 2012 - Present Advisor/Mentor, Tyson Meyer, University of Utah

Graduate Student Committees

- 2019 - Present Member, Emma James, University of Utah
- 2011 - 2013 Member, Timothy G. Jenkins, University of Utah

Didactic Lectures

- 2021 Embryology. University of Utah, Reproductive Endocrinology and Infertility Fellows, Salt Lake City, UT
- 2021 Genetics and Epigenetics of Male Infertility Research Update. University of Utah, Division of Urology, Salt Lake City, UT
- 2015 Fertility preservation options at the University of Utah. Huntsman Cancer Hospital nurses and social workers.
- 2012 Andrology & Male Infertility, Resident Forum, University of Utah School of Medicine, Department of Surgery, Division of Urology: Andrology & IVF Laboratories

PEER-REVIEWED JOURNAL ARTICLES

1. Ribas-Maynou J, Yeste M, Becerra-Tomás N, **Aston KI**, James ER, Salas-Huetos A (2021). Clinical implications of sperm DNA damage in IVF and ICSI: updated systematic review and meta-analysis.(Epub ahead of print) *Biol Rev Camb Philos Soc*.
2. Houston BJ, Nagirnaja L, Merriner DJ, O'Connor AE, Okuda H, Omurtag K, Smith C, **Aston KI**, Conrad DF, O'Bryan MK (2021). The Sertoli cell expressed gene *secernin-1* (*Scrn1*) is dispensable for male fertility in the mouse.(Epub ahead of print) *Dev Dyn*.
3. Salas-Huetos A, James ER, Salas-Salvadó J, Bulló M, **Aston KI**, Carrell DT, Jenkins TG (2021).

- Sperm DNA methylation changes after short-term nut supplementation in healthy men consuming a Western-style diet. *Andrology*, 9(1), 260-268.
4. Salas-Huetos A, Maghsoumi-Norouzabad L, James ER, Carrell DT, **Aston KI**, Jenkins TG, Becerra-Tomás N, Javid AZ, Abed R, Torres PJ, Luque EM, Ramírez ND, Martini AC, Salas-Salvadó J (2021). Male adiposity, sperm parameters and reproductive hormones: An updated systematic review and collaborative meta-analysis. *Obes Rev*, 22(1), e13082.
 5. Xavier MJ, Salas-Huetos A, Oud MS, **Aston KI**, Veltman JA (2021). Disease gene discovery in male infertility: past, present and future. *Hum Genet*, 140(1), 7-19.
 6. Salas-Huetos A, Tüttelmann F, Wyrwoll MJ, Kliesch S, Lopes AM, Goncalves J, Boyden SE, Wöste M, Hotaling JM, GEMINI Consortium., Nagirnaja L, Conrad DF, Carrell DT, **Aston KI** (2021). Disruption of human meiotic telomere complex genes TERB1, TERB2 and MAJIN in men with non-obstructive azoospermia. *Hum Genet*, 140(1), 217-227.
 7. Krausz C, Riera-Escamilla A, Moreno-Mendoza D, Holleman K, Cioppi F, Algaba F, Pybus M, Friedrich C, Wyrwoll MJ, Casamonti E, Pietroforte S, Nagirnaja L, Lopes AM, Kliesch S, Pilatz A, Carrell DT, Conrad DF, Ars E, Ruiz-Castañé E, **Aston KI**, Baarends WM, Tüttelmann F (2020). Genetic dissection of spermatogenic arrest through exome analysis: clinical implications for the management of azoospermic men. *Genet Med*, 22(12), 1956-1966.
 8. Santana VP, James ER, Miranda-Furtado CL, Souza MF, Pompeu CP, Esteves SC, Carrell DT, **Aston KI**, Jenkins TG, Reis RMD (2020). Differential DNA methylation pattern and sperm quality in men with varicocele. *Fertil Steril*, 114(4), 770-778.
 9. Salas-Huetos A, James ER, Broberg DS, **Aston KI**, Carrell DT, Jenkins TG (2020). The combined effect of obesity and aging on human sperm DNA methylation signatures: inclusion of BMI in the paternal germ line age prediction model. *Sci Rep*, 10(1), 15409.
 10. Wyrwoll MJ, Temel ŞG, Nagirnaja L, Oud MS, Lopes AM, van der Heijden GW, Heald JS, Rotte N, Wistuba J, Wöste M, Ledig S, Krenz H, Smits RM, Carvalho F, Gonçalves J, Fietz D, Türkgenç B, Ergören MC, Çetinkaya M, Başar M, Kahraman S, McEleny K, Xavier MJ, Turner H, Pilatz A, Röpke A, Dugas M, Kliesch S, Neuhaus N, GEMINI Consortium., **Aston KI**, Conrad DF, Veltman JA, Friedrich C, Tüttelmann F (2020). Bi-allelic Mutations in M1AP Are a Frequent Cause of Meiotic Arrest and Severely Impaired Spermatogenesis Leading to Male Infertility. *Am J Hum Genet*, 107(2), 342-351.
 11. James ER, Carrell DT, **Aston KI**, Jenkins TG, Yeste M, Salas-Huetos A (2020). The Role of the Epididymis and the Contribution of Epididymosomes to Mammalian Reproduction. *Int J Mol Sci*, 21(15).
 12. Murphy PJ, Guo J, Jenkins TG, James ER, Hoidal JR, Huecksteadt T, Broberg DS, Hotaling JM, Alonso DF, Carrell DT, Cairns BR, **Aston KI** (2020). NRF2 loss recapitulates heritable impacts of paternal cigarette smoke exposure. *PLoS Genet*, 16(6), e1008756.
 13. Patel DP, Jenkins TG, **Aston KI**, Guo J, Pastuszak AW, Hanson HA, Hotaling JM (2020). Harnessing the full potential of reproductive genetics and epigenetics for male infertility in the era of "big data". *Fertil Steril*, 113(3), 478-488.
 14. Mangum CL, Patel DP, Jafek AR, Samuel R, Jenkins TG, **Aston KI**, Gale BK, Hotaling JM (2020). Towards a better testicular sperm extraction: novel sperm sorting technologies for non-motile sperm extracted by microdissection TESE. *Transl Androl Urol*, 9(Suppl 2), S206-S214.
 15. Salas-Huetos A, James ER, **Aston KI**, Carrell DT, Jenkins TG, Yeste M (2020). The role of miRNAs in male human reproduction: a systematic review. *Andrology*, 8(1), 7-26.
 16. Jenkins TG, James ER, **Aston KI**, Salas-Huetos A, Pastuszak AW, Smith KR, Hanson HA, Hotaling JM, Carrell DT (2019). Age-associated sperm DNA methylation patterns do not directly persist trans-generationally. *Epigenetics Chromatin*, 12(1), 74.

17. Salas-Huetos A, James ER, **Aston KI**, Jenkins TG, Carrell DT, Yeste M (2019). The Expression of miRNAs in Human Ovaries, Oocytes, Extracellular Vesicles, and Early Embryos: A Systematic Review. *Cells*, 8(12).
18. Lee AS, Rusch J, Lima AC, Usmani A, Huang N, Lepamets M, Vigh-Conrad KA, Worthington RE, Mägi R, Wu X, **Aston KI**, Atkinson JP, Carrell DT, Hess RA, O'Bryan MK, Conrad DF (2019). Rare mutations in the complement regulatory gene CSMD1 are associated with male and female infertility. *Nat Commun*, 10(1), 4626.
19. Salas-Huetos A, James ER, **Aston KI**, Jenkins TG, Carrell DT (2019). Diet and sperm quality: Nutrients, foods and dietary patterns. *Reprod Biol*, 19(3), 219-224.
20. Jenkins TG, **Aston KI**, Cairns B, Smith A, Carrell DT (2018). Paternal germ line aging: DNA methylation age prediction from human sperm. *BMC Genomics*, 19(1), 763.
21. Kasak L, Punab M, Nagirnaja L, Grigorova M, Minajeva A, Lopes AM, Punab AM, **Aston KI**, Carvalho F, Laasik E, Smith LB, GEMINI Consortium., Conrad DF, Laan M (2018). Bi-allelic Recessive Loss-of-Function Variants in FANCM Cause Non-obstructive Azoospermia. *Am J Hum Genet*, 103(2), 200-212.
22. Patel DP, Williams L, Warner L, O'Neil ME, **Aston K**, Carrell DT, Grigorescu V, Jamieson DJ, Gannon JR, Eisenberg ML, Walsh TJ, Hotaling JM (2018). Use of secondary contraception following vasectomy: insights from the Pregnancy Risk Assessment Monitoring System, 2007-2011. *Transl Androl Urol*, 7(Suppl 3), S264-S270.
23. Jenkins TG, **Aston KI**, Carrell DT (2018). Sperm epigenetics and aging. *Transl Androl Urol*, 7 (Suppl 3), S328-S335.
24. Keihani S, Martin C, Craig JR, Zhang C, Presson AP, Myers JB, **Aston KI**, Emery BR, Carrell DT, Hotaling JM (2018). Semen parameters are unaffected by statin use in men evaluated for infertility. *Andrologia*, 50(5), e12995.
25. Keihani S, Craig JR, Zhang C, Presson AP, Myers JB, Brant WO, **Aston KI**, Emery BR, Jenkins TG, Carrell DT, Hotaling JM (2018). Proton-pump inhibitor use does not affect semen quality in subfertile men. *Asian J Androl*, 20(3), 290-293.
26. Anderson RE, Hanson HA, Thai D, Zhang C, Presson AP, **Aston KI**, Carrell DT, Smith KR, Hotaling JM (2018). Do paternal semen parameters influence the birth weight or BMI of the offspring? A study from the Utah Population Database. *J Assist Reprod Genet*, 35(5), 793-799.
27. Jenkins TG, Liu L, **Aston KI**, Carrell DT (2018). Pre-screening method for somatic cell contamination in human sperm epigenetic studies. *Syst Biol Reprod Med*, 64(2), 146-155.
28. Hanson BM, **Aston KI**, Jenkins TG, Carrell DT, Hotaling JM (2018). The impact of ejaculatory abstinence on semen analysis parameters: a systematic review. *J Assist Reprod Genet*, 35(2), 213-220.
29. Nagirnaja L, **Aston KI**, Conrad DF (2018). Genetic intersection of male infertility and cancer. *Fertil Steril*, 109(1), 20-26.
30. Jenkins TG, James ER, Alonso DF, Hoidal JR, Murphy PJ, Hotaling JM, Cairns BR, Carrell DT, **Aston KI** (2017). Cigarette smoking significantly alters sperm DNA methylation patterns. *Andrology*, 5(6), 1089-1099.
31. Keihani S, Craig JR, Zhang C, Presson AP, Myers JB, Brant WO, **Aston KI**, Emery BR, Jenkins TG, Carrell DT, Hotaling JM (2017). Impacts of Abstinence Time on Semen Parameters in a Large Population-based Cohort of Subfertile Men. *Urology*, 108, 90-95.
32. Martin L, Mullaney S, Peche W, Peterson K, Chan S, Morton R, Wan Y, Zhang C, Presson AP, Emery B, **Aston K**, Jenkins T, Carrell D, Hotaling J (2017). Population-based Semen Analysis Results and Fertility Among Patients With Inflammatory Bowel Disease: Results From Subfertility Health Assisted Reproduction and the Environment (SHARE) Study. *Urology*, 107, 114-119.

33. Jenkins TG, **Aston KI**, James ER, Carrell DT (2017). Sperm epigenetics in the study of male fertility, offspring health, and potential clinical applications. *Syst Biol Reprod Med*, 63(2), 69-76.
34. Simon L, **Aston KI**, Emery BR, Hotaling J, Carrell DT (2017). Sperm DNA damage output parameters measured by the alkaline Comet assay and their importance. LID - 10.1111/and.12608 [doi]. *Andrologia*, 49(2).
35. Anderson RE, Hanson HA, Lowrance WT, Redshaw J, Oottamasathien S, Schaeffer A, Johnstone E, **Aston KI**, Carrell DT, Cartwright P, Smith KR, Hotaling JM (2017). Childhood Cancer Risk in the Siblings and Cousins of Men with Poor Semen Quality. *J Urol*, 197(3 Pt 2), 898-905.
36. Hanson HA, Mayer EN, Anderson RE, **Aston KI**, Carrell DT, Berger J, Lowrance WT, Smith KR, Hotaling JM (2017). Risk of childhood mortality in family members of men with poor semen quality. *Hum Reprod*, 32(1), 239-247.
37. Jenkins TG, Shamsi MB, James E, **Aston KI**, Carrell DT (2017). Thermo Stability of DNA Methylation Marks in Human Sperm. *J Genet Genome Res*, 4(1).
38. Anderson RE, Hanson HA, Patel DP, Johnstone E, **Aston KI**, Carrell DT, Lowrance WT, Smith KR, Hotaling JM (2016). Cancer risk in first- and second-degree relatives of men with poor semen quality. *Fertil Steril*, 106(3), 731-8.
39. Jenkins TG, **Aston KI**, Hotaling JM, Shamsi MB, Simon L, Carrell DT (2016). Teratozoospermia and asthenozoospermia are associated with specific epigenetic signatures. *Andrology*, 4(5), 843-9.
40. Simon L, Murphy K, **Aston KI**, Emery BR, Hotaling JM, Carrell DT (2016). Optimization of microelectrophoresis to select highly negatively charged sperm. *J Assist Reprod Genet*, 33(6), 679-88.
41. Hanson HA, Anderson RE, **Aston KI**, Carrell DT, Smith KR, Hotaling JM (2016). Subfertility increases risk of testicular cancer: evidence from population-based semen samples. *Fertil Steril*, 105(2), 322-8.e1.
42. Jenkins TG, **Aston KI**, Meyer TD, Hotaling JM, Shamsi MB, Johnstone EB, Cox KJ, Stanford JB, Porucznik CA, Carrell DT (2016). Decreased fecundity and sperm DNA methylation patterns. *Fertil Steril*, 105(1), 51-7.e1-3.
43. Carrell DT, **Aston KI**, Oliva R, Emery BR, De Jonge CJ (2016). The "omics" of human male infertility: integrating big data in a systems biology approach. *Cell Tissue Res*, 363(1), 295-312.
44. **Aston KI**, Uren PJ, Jenkins TG, Horsager A, Cairns BR, Smith AD, Carrell DT (2015). Aberrant sperm DNA methylation predicts male fertility status and embryo quality. *Fertil Steril*, 104(6), 1388-97.e1-5.
45. Patel DP, Brant WO, Myers JB, Presson AP, Johnstone EB, Dorais JA, **Aston KI**, Carrell DT, Hotaling JM (2015). The safety and efficacy of clomiphene citrate in hypoandrogenic and subfertile men. *Int J Impot Res*, 27(6), 221-4.
46. Ge SQ, Griffin J, Liu LH, **Aston KI**, Simon L, Jenkins TG, Emery BR, Carrell DT (2015). Associations of single nucleotide polymorphisms in the Pygo2 coding sequence with idiopathic oligospermia and azoospermia. *Genet Mol Res*, 14(3), 9053-61.
47. Patel DP, Brant WO, Myers JB, Zhang C, Presson AP, Johnstone EB, Dorais JA, **Aston KI**, Carrell DT, Hotaling JM (2015). Sperm concentration is poorly associated with hypoandrogenism in infertile men. *Urology*, 85(5), 1062-1067.
48. Jenkins TG, **Aston KI**, Trost C, Farley J, Hotaling JM, Carrell DT (2015). Intra-sample heterogeneity of sperm DNA methylation. *Mol Hum Reprod*, 21(4), 313-9.
49. Simon L, Murphy K, **Aston KI**, Emery BR, Hotaling JM, Carrell DT (2015). Micro-electrophoresis: a noninvasive method of sperm selection based on membrane charge. *Fertil Steril*, 103(2), 361-6.e3.

50. Simon L, Murphy K, Shamsi MB, Liu L, Emery B, **Aston KI**, Hotaling J, Carrell DT (2014). Paternal influence of sperm DNA integrity on early embryonic development. *Hum Reprod*, 29(11), 2402-12.
51. **Aston KI**, Carrell DT (2014). Prospects for clinically relevant epigenetic tests in the andrology laboratory. *16*(5), 782.
52. Jenkins TG, **Aston KI**, Pflueger C, Cairns BR, Carrell DT (2014). Age-associated sperm DNA methylation alterations: possible implications in offspring disease susceptibility. *PLoS Genet*, 10(7), e1004458.
53. Simon L, Liu L, Murphy K, Ge S, Hotaling J, **Aston KI**, Emery B, Carrell DT (2014). Comparative analysis of three sperm DNA damage assays and sperm nuclear protein content in couples undergoing assisted reproduction treatment. *Hum Reprod*, 29(5), 904-17.
54. **Aston KI** (2014). Genetic susceptibility to male infertility: news from genome-wide association studies. *Andrology*, 2(3), 315-21.
55. Jenkins TG, **Aston KI**, Cairns BR, Carrell DT (2013). Paternal aging and associated intraindividual alterations of global sperm 5-methylcytosine and 5-hydroxymethylcytosine levels. *Fertil Steril*, 100(4), 945-51.
56. Ge SQ, Griffin J, Liu L, **Aston KI**, Simon L, Jenkins TG, Emery BR, Carrell DT (2013). Association of single nucleotide polymorphisms (SNPs) in Pygo2 coding gene with idiopathic oligozoospermia and azoospermia. *Hereditas*, 35(5), 616-622.
57. Lopes AM, **Aston KI**, Thompson E, Carvalho F, Gonçalves J, Huang N, Matthiesen R, Noordam MJ, Quintela I, Ramu A, Seabra C, Wilfert AB, Dai J, Downie JM, Fernandes S, Guo X, Sha J, Amorim A, Barros A, Carracedo A, Hu Z, Hurler ME, Moskovtsev S, Ober C, Paduch DA, Schiffman JD, Schlegel PN, Sousa M, Carrell DT, Conrad DF (2013). Human spermatogenic failure purges deleterious mutation load from the autosomes and both sex chromosomes, including the gene DMRT1. *PLoS Genet*, 9(3), e1003349.
58. **Aston KI**, Hunt SC, Susser E, Kimura M, Factor-Litvak P, Carrell D, Aviv A (2012). Divergence of sperm and leukocyte age-dependent telomere dynamics: implications for male-driven evolution of telomere length in humans. *Mol Hum Reprod*, 18(11), 517-22.
59. **Aston KI**, Punj V, Liu L, Carrell DT (2012). Genome-wide sperm deoxyribonucleic acid methylation is altered in some men with abnormal chromatin packaging or poor in vitro fertilization embryogenesis. *Fertil Steril*, 97(2), 285-92.
60. Jenkins TG, **Aston KI**, Carrell DT (2011). Supplementation of cryomedium with ascorbic acid-2-glucoside (AA2G) improves human sperm post-thaw motility. *Fertil Steril*, 95(6), 2001-4.
61. **Aston KI**, Krausz C, Laface I, Ruiz-Castane E, Carrell DT (2010). Evaluation of 172 candidate polymorphisms for association with oligozoospermia or azoospermia in a large cohort of men of European descent. *Hum Reprod*, 25(6), 1383-97.
62. Stevens JR, Bell JL, **Aston KI**, White KL (2010). A comparison of probe-level and probeset models for small-sample gene expression data. *BMC Bioinformatics*, 11, 281.
63. **Aston KI**, Li GP, Hicks BA, Sessions BR, Davis AP, Rickords LF, Stevens JR, White KL (2010). Abnormal levels of transcript abundance of developmentally important genes in various stages of preimplantation bovine somatic cell nuclear transfer embryos. *Cell Reprogram*, 12(1), 23-32.
64. **Aston KI**, Carrell DT (2009). Genome-wide study of single-nucleotide polymorphisms associated with azoospermia and severe oligozoospermia. *J Androl*, 30(6), 711-25.
65. Li GP, White KL, **Aston KI**, Bunch TD, Hicks B, Liu Y, Sessions BR (2009). Colcemid-treatment of heifer oocytes enhances nuclear transfer embryonic development, establishment of pregnancy and development to term. *Mol Reprod Dev*, 76(7), 620-8.
66. **Aston KI**, Li GP, Hicks BA, Sessions BR, Davis AP, Winger QA, Rickords LF, Stevens JR, White

- KL (2009). Global gene expression analysis of bovine somatic cell nuclear transfer blastocysts and cotyledons. *Mol Reprod Dev*, 76(5), 471-82.
67. **Aston KI**, Li GP, Hicks BA, Winger QA, White KL (2009). Genetic reprogramming of transcription factor ap-2gamma in bovine somatic cell nuclear transfer preimplantation embryos and placentomes. *Cloning Stem Cells*, 11(1), 177-86.
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 69. Pate BJ, White KL, Chen D, **Aston KI**, Sessions BR, Bunch TD, Weimer BC (2008). A novel approach to identify bovine sperm membrane proteins that interact with receptors on the vitelline membrane of bovine oocytes. *Mol Reprod Dev*, 75(4), 641-9.
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 79. Vanderwall DK, Woods GL, **Aston KI**, Bunch TD, Li G, Meerdo LN, White KL (2004). Cloned horse pregnancies produced using adult cumulus cells. *Reprod Fertil Dev*, 16(7), 675-9.
 80. Woods GL, White KL, Vanderwall DK, Li GP, **Aston KI**, Bunch TD, Meerdo LN, Pate BJ (2003). A mule cloned from fetal cells by nuclear transfer. *Science*, 301(5636), 1063.

NON PEER-REVIEWED JOURNAL ARTICLES

1. Carrell DT, **Aston KI** (2011). Sperm genetic testing: clinical implications and use. *AUA Updat Ser*, 30, 129-136.

REVIEW ARTICLES

1. Jenkins TG, **Aston KI**, James ER, Carrell DT (2017). Sperm epigenetics in the study of male fertility, offspring health, and potential clinical applications. [Review]. *Syst Biol Reprod Med*, 63, (2), 69-76.
2. Jenkins TG, **Aston KI**, Meyer T, Carrell DT (2015). The Sperm Epigenome, Male Aging, and Potential Effects on the Embryo. [Review]. *Adv Exp Med Biol*, 868, 81-93.
3. **Aston KI**, Carrell DT (2012). Emerging evidence for the role of genomic instability in male factor infertility. [Review]. *Syst Biol Reprod Med*, 58, (2), 71-80.
4. Carrell DT, **Aston KI** (2011). The search for SNPs, CNVs, and epigenetic variants associated with the complex disease of male infertility. [Review]. *Syst Biol Reprod Med*, 57, (1-2), 17-26.
5. Tamowski S, **Aston KI**, Carrell DT (2010). The use of transgenic mouse models in the study of male infertility. [Review]. *Syst Biol Reprod Med*, 56, (3), 260-73.

EDITED BOOKS

1. Carrell DT, **Aston KI** (Eds.) (2013). *Methods in Molecular Biology: Spermatogenesis and Spermiogenesis: Methods and Protocols*. New York: Springer.

BOOK CHAPTERS

1. Carrell DT, Jenkins TG, Emery BR, Hotaling JM, **Aston KI** (2018). The Role of Reproductive Genetics in Modern Andrology. In Palermo GD and Sills Es (Eds.), *Intracytoplasmic Sperm Injection: Indications, Techniques and Applications* (pp. 23-38). Springer.
2. **Aston KI** (2013). Caution in interpreting semen analysis data. In Carrell DT (Ed.), *Paternal Influences on Human Reproductive Success* Cambridge University Press.
3. Jenkins TG, **Aston KI** and Carrell DT (2013). The aging male and impact on offspring. In Carrell DT (Ed.), *Paternal Influences on Human Reproductive Success* Cambridge University Press.
4. **Aston KI**, Conrad DF (2013). The Sperm Genome: Effect of Aneuploidies, Structural Variations, and SNPs on Embryogenesis and Development. In Carrell DT (Ed.), *Paternal Influences on Human Reproductive Success* Cambridge.
5. **Aston KI**, Conrad DF (2013). A review of genome-wide approaches to study the genetic basis for spermatogenic defects. In *Pharmac* (927, pp. 397-410). United States.
6. Liu L, **Aston KI**, Carrell DT (2013). Protamine extraction and analysis of human sperm protamine 1/protamine 2 ratio using Acid gel electrophoresis. In *Pharmac* (927, pp. 445-50). United States.
7. **Aston KI**, Weimer KE (2010). Micromanipulation of Human Oocytes and Embryos: Applications of Intracytoplasmic Sperm Injection and Assisted Hatching in Infertility Treatment. In Carrell DT, Peterson CM (Eds.), *Reproductive Endocrinology and Infertility* Springer.
8. **Aston KI**, Sessions BR, White KL (2009). Cloning Research in Yearbook of Science and Technology. New York: McGraw-Hill.

ADDITIONAL PUBLICATIONS

Editorials

1. Hotaling JM, **Aston KI**, Carrell DT (2014). Refined phenotyping, large cohorts, and collaborative research are vital for realizing the potential of genomics to transform care for male infertility. *102* (4), 967.

Others

1. Salas-Huetos A, Tüttelmann F, Wyrwoll MJ, Kliesch S, Lopes AM, Gonçalves J, Boyden SE, Wöste M, Hotaling JM, GEMINI Consortium., Nagirnaja L, Conrad DF, Carrell DT, **Aston KI** (2021). Correction to: Disruption of human meiotic telomere complex genes TERB1, TERB2 and MAJIN in men with non-obstructive azoospermia. *Hum Genet* (140(1), p. 229). Germany.
2. Patel B, Johnstone EB, Presson A, Zhang C, Jenkins T, **Aston KI**, Carrell DT, Hotaling JM (2016). The Effect of ADHD Medications on Semen Analysis In Sub-Fertile Couples. Poster selected for phone-in briefing for journalists prior to 72nd American Society for Reproductive Medicine 2016 Scientific Congress & Expo, Oct.10, Salt Lake City, UT.

PENDING PUBLICATIONS

Journal Articles

1. Salas-Huetos A, James ER, **Aston KI**, Carrell DT, Jenkins TG & Yeste M (In Press). The role of miRNAs in male human reproduction: A systematic review. *Andrology*.

Book Chapters

1. James ER, Salas-Huetos A, Gostick T, **Aston KI**, Carrell DT & Jenkins TG (In Press). Aging of Male and Female Gametes – Reproductive Senescence. In Balasinor, Parte, Singh (Eds.), *Epigenetics and Reproductive Health*.

RECENTLY PUBLISHED ABSTRACTS (LAST 3 YEARS)

1. Murphy PJ, Guo J, Jenkins TG, Hoidal JR, Huecksteadt T, Hotaling JM, Carrell DT, Cairns BR, **Aston KI** (2019). Cigarette smoke-induced oxidative stress alters DNA methylation patterns in sperm and neurological gene expression patterns in offspring. Presented at the 74th American Society for Reproductive Medicine Scientific Congress & Expo, Philadelphia, PA, Oct 12-16. [Abstract].
2. Jenkins TG, James E, **Aston KI**, Hotaling JM, Carrell DT (2019). Subtile signatures of aging persist over two generations through the paternal germ line. Presented at the 74th American Society for Reproductive Medicine Scientific Congress & Expo, Philadelphia, PA, Oct 12-16. [Abstract].
3. Jafek A, Brady H, Feng H, Hotaling JM, Carrell DT, Gale B, Samuel R, **Aston KI**, Jenkins T (2019). Rapid microfluidic sperm preparation for intrauterine insemination. Presented at the American Urological Association Annual Meeting, Chicago IL, May 3-6 [Abstract]. *Journal of Urology*, 201(Suppl 4).
4. Jafek A, Feng H, Jenkins T, **Aston KI**, Carrell DT, Gale B, Samuel R, Hotaling JM (2019). A novel microfluidic device to improve sperm searching in microdissection TESE samples. Presented at the American Urological Association Annual Meeting, Chicago IL, May 3-6 [Abstract]. *Journal of Urology*, 201(Suppl 4).
5. Cheng P, Keihani S, Presson A, Zhang C, Hanson H, Smith K, Carrell DT, **Aston KI**, Pastuszak AW, Hotaling JM (2019). Seasonal variation in male infertility measures and corresponding birth patterns. Presented at The American Society of Andrology 44th Annual Conference, Chicago IL, April 6-9 [Abstract]. *Andrology*, 7(S1).
6. Salas-Huetos A, James ER, Bullo M, Salas-Salvado J, Carrell DT, Aston AI, Jenkins TG (2019). Sperm DNA methylation changes after nut supplementation in healthy males consuming a western-style diet. Presented at the American Society of Andrology 44th Annual Conference, Chicago IL, April 4-6 [Abstract]. *Andrology*, 7(S1).

7. Cheng P, Keihani S, Presson A, Zhang C, Hanson H, Smith K, Carrell DT, **Aston KI**, Pastuszak AW, Hotaling JM (2019). Seasonal variation in male fertility measures and corresponding birth patterns. Presented at the American Urological Association Annual Meeting, Chicago IL, May 3-6 [Abstract]. *Journal of Urology*, 201(Supp 4).
8. Salas-Huetos A, Babio N, Carrell DT, Jenkins TG, **Aston KI**, Bullo M, Salas-Salvado J (2019). Adherence to the Mediterranean diet is positively associated with sperm motility: a cross-sectional analysis. Presented at The American Society of Andrology 44th Annual Conference, Chicago IL, April 6-9 [Abstract]. *Andrology, Suppl.*
9. Broberg D, Jenkins T, **Aston KI**, Carrell DT (2018). The combined effect of BMI and aging on DNA methylation signatures in human sperm [Abstract]. *American Society of Andrology 43rd Annual Meeting, Portland, OR, April 21-24, .*
10. Simon L, Jenkins T, **Aston KI**, Carrell DT (2018). Differential RNA expression in the sperm of couples with recurrent pregnancy loss. [Abstract]. *American Society of Andrology 43rd Annual Meeting, Portland, OR, April 21-24, .*
11. Jenkins T, **Aston KI**, Carrell DT, (2018). Patterns of epigenetic instability provide novel insight into human sperm function as well as potential diagnostic utility [Abstract]. *American Society of Andrology 43rd Annual Meeting, Portland, OR, April 21-24, .*
12. Nagiraj L, Rusch J, Lopes A, Almstrup K, Houston B, Rajpert-De Meyts E, Laan M, O'Bryan M, **Aston KI**, Conrad DF, and The GEMENI Consortium (4/2/2018). GEMENI Study: Fine-mapping the genetic architecture of severe male infertility. [Abstract]. *American Society of Andrology 43rd Annual Conference, Portland, OR, April 21-24, .*
13. **Aston KI**, Murphy P, Jenkins T, Carrell DT, Cairins B (2018). Cigarette smoke-induced sperm DNA methylation (DNAM) changes in mice and partial recovery following smoking cessation. [Abstract]. *American Society of Andrology 43rd Annual Conference, Portland, OR, April 21-24, .*

POSTER PRESENTATIONS

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| 2017 | Martin L, Peche W, Peterson K, Chan S, Morton R, Wan Y, Emery B, Aston K , Jenkins T, Presson A, Zhang C, Carrell D, Hotaling J. <i>Population-based semen analysis result and fertility among men with inflammatory bowel disease: Results from Subfertility Health Assisted Reproduction and the Environment (SHARE) study</i> . Poster session presented at Utah Chapter Meeting of the American College of Surgeons, Salt Lake City, UT, May 11. |
| 2016 | Presson AP, Trofimenko V, Zhang C, Hanson HA, Smith KR, Carrell DT, Aston KI , Hotaling JM. <i>Seasonal Variation In Male Fertility Measures And Corresponding Birth Patterns</i> . Poster session presented at Annual Meeting of the Western Section of the American Urologic Association, Kauai, HI, Oct. 23-28. |
| 2016 | Patel DP, Myers JB, Brant WO, Aston KI , Carrell DT, Hotaling JM. <i>Recent Exogenous Testosterone Use Among Men Presenting For Infertility Evaluation</i> . Poster session presented at Annual Meeting of the Western Section of the American Urologic Association, Kauai, HI, Oct. 23-28. |

ORAL PRESENTATIONS

Meeting Presentations

International

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| 2019 | Sperm Epigenetic Changes – Causes and Consequences. Presented at the 3 rd Andrology Symposium, University of Zagreb School of Medicine, June 5-7, Zagreb, Croatia. |
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National

- 2012 Male Infertility and CNVs: Preliminary Data, Cambridge Healthtech Institute and NGS Leaders' Third Annual X-Gen Congress and Expo, Copy Number and Structural Variation Section, San Diego, CA.
- 2010 A novel deletion on Yq11 is associated with severe oligozoospermia and azoospermia. Poster session presented at American Society of Reproductive Medicine 66th Annual Meeting
- 2009 Genome-wide scan for single nucleotide polymorphisms associated with severe oligozoospermia and azoospermia in men. Poster session presented at American Society of Andrology 34th Annual Meeting.

Local/Regional

- 2006 Incomplete nuclear reprogramming in bovine nuclear transfer placentation- a Microarray Study. Poster session presented at USU Graduate Student Symposium.
- 2004 Nuclear transfer cytoplasts derived from cow oocytes support more efficient development in vivo but not in vitro compared to heifer-oocyte-derived cytoplasts. Presented at American Association for the Advancement of Science, Pacific Division: 85th Annual Meeting.

Invited/Visiting Professor Presentations

International

- 2018 Male Infertility: Diagnostics, Etiologies, and Emerging Research, Debrecen, Hungary
- 2013 Genetic susceptibility to male infertility: news from genome-wide association studies, Genetics of Male Infertility Symposium, Florence, Italy
- 2011 Candidate Polymorphisms (and emerging genetic features) Associated With Severe Male Factor Infertility, Sero Symposia International, Defining patient's subgroups to personalize infertility treatment, Copenhagen, Denmark

National

- 2017 Genetic causes of human azoospermia, Annual Meeting of the American Society of Andrology, Miami, FL, April 25.

Local/Regional

- 2013 Fertility Preservation for Oncology Patients, Supporting Survivors, 6th Annual Oncology Conference, Huntsman Cancer Institute, University of Utah, Salt Lake City, UT
- 2013 Genetics and Epigenetics of Spermatogenesis, USDA Regional Meeting, Utah State University, Logan, UT

OTHER SCHOLARLY ACTIVITIES

Additional Research/Scholarship Contributions

- 2018 - Present Founding Member of Genetics of Male Infertility Initiative (GEMINI)
- 2018 - Present Founding Member of International Male Infertility Genomics Consortium

2016 - Present

NANONC Inc., Salt Lake City, Utah. Co-founder of a microfluidic sperm sorting company with Bruce Gale, Douglas T. Carrell, Tim Jenkins, James M. Hotaling, and Raheel Samuel. Company has received two SSTR grants, had a funded SBIR grant that was declined due to overlap with SSTR grant and has one full time and four part time employees. We have two pending patents and will apply for phase II NSF and NIH grants in fall 2016.