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Scientist -1
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2099/2083- Department of Reproductive Biology
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1. Research Area & Interest: Reproductive Genetics including developmental genetics & preimplantation genetics, Genomic and Epigenomic of Male & Female Infertility, Semen Banking & Molecular Cytogenetics

2. Education Details (Post-graduation onwards & Professional Career)

S.n.	Degree Awarded	Institute/ Place	Academic Year	Field of Study
1.	PhD	AIIMS, New Delhi	2012	Reproductive Genectics
2.	M.Sc.	C.C.S. University Meerut, U.P	2005	Microbiology
3.	B.Sc.	C.C.S. University Meerut, U.P	2003	Zoology, Botany, Chemistry
4.	XII	U.P Board, Allahabad	1999	Biology
5.	X	U.P Board, Allahabad	1997	Biology

3. Employment Details: Position and Employment (Starting with the most recent employment)

S.n.	Institute /Place	Designation	From	To
1.	Department of Reproductive Biology, All India Institute of Medical Sciences (AIIMS)	Scientist (Regular)	27-8-16	**Ongoing**
2.	Department of Reproductive Biology, All India Institute of Medical Sciences (AIIMS)	Scientist (Adhoc.)	12-11-2012	26-08-16

3.	Department of Reproductive Biology, All India Institute of Medical Sciences (AIIMS)	Research Associate (RA)	16-5-2011	10-11-12
4.	Department of Reproductive Biology, All India Institute of Medical Sciences (AIIMS)	Senior Research Fellow (SRF)	15-9-2009	15-03-2011
5.	Department of Reproductive Biology, All India Institute of Medical Sciences (AIIMS)	Junior Research Fellow (JRF)	21-8-2006	20-07-2009

4. Details of ongoing projects.

- Idiopathic Sertoli Cell Only Syndrome (SCOS): An Investigation to find out Epigenomic Etiologies **(PI) (Funding: 38 lakhs, ICMR, New Delhi)**
- An Investigation on underlying mechanism of PCOS in association with endocrine disrupting chemicals (Bisphenol A and advanced Glycation End Product) **(Co-PI) (Funding: 85 lakhs, DST, New Delhi)**
- An investigation on the role of genes of steroid biosynthesis pathway in PCOS patients with mildly high basal 17-OH-progesterone levels **(Co-PI) (Funding: 67 lakhs, ICMR, New Delhi)**

Completed Project

- High resolution Genomic Screening using SNP Microarray to find out Genomic Causes in Idiopathic Sertoli Cell Only Syndrome (SCOS) cases **(PI) (Funding: 10 lakhs, AIIMS, New Delhi)**
- An investigation to find out genetic factors in idiopathic familial ovarian failure **(Co-PI) (Funding: 73 lakhs, DST, New Delhi)**
- Poly Cystic Ovarian Syndrome (PCOS): An investigation to find out reasons for discrepancy between hyperandrogenism (clinical) & hyperandrogenemia (biochemical) and underlying etiologic (epigenetic & genetic) factors(Co-PI) (Funding: lakhs, AIIMS, New Delhi) **(Co-PI) (Funding: 55 lakhs, DST, New Delhi)**

5. Departmental projects (including thesis/dissertations)

Thesis Submitted

S. No.	Title of the project
1.	Genetic Study on Sertoli Cell Only Syndrome (SCOS)
2.	An investigation to find out genetic factors in idiopathic familial ovarian failure

Ongoing

S. No.	Title of the project
1.	Prevalence of Yq Micro-deletions in Random Population
2.	MicroRNA expression profiles in Sertoli cell only syndrome (SCOS) cases

6. Total Research Experience:

- Worked on Reproductive Endocrinology/Reproductive Genetics/Male Infertility, Microarray Technologies.
- Worked on "Rapid detection of Chromosome 21 & 13 Aneuploidy by Primed In Situ Labelling".
- Worked on "Genetic and Endocrine study on Primary Testicular Failure".
- Worked on "Sertoli Cell Maturation Status, Role of Heavy Metals & Role of Vitamin A in Spermiation Defects in Human".
- Worked on "Prevalence of 22q11.2 micro deletion syndrome in children with structural cardiac malformation: a tertiary care referral hospital-based study in Delhi".
- Got training in Array CGH, MLPA, QF-PCR techniques in a workshop conducted by Department of Genetics, AIIMS in February, 2011.
- Got training in Array CGH in "The Centre for Genomic Application" (TCGA) in 2010.
- Training on Genetic analyzer on 18^{th}- 20^{th} March, 2013 at Gurgaon facility of Applied Biosystem 310.
- Mouse embryo production, handling and FISH
- Co-Organizer in symposium on "**Impact of Endocrine Disrupters on Reproductive Health**" conduct on *20^{th} July,2013* in Department of Reproductive Biology, AIIMS
- Organize a "**National Workshop on Molecular Cytogenetics: In House FISH Probe Production"**12-16th November, 2018, Department of Reproductive Biology, AIIMS New Delhi

7. Professional Recognition/Awards/Prize/Fellowship:

S.No.	Name of Award	Awarding Agency	Year
1.	GATE	Indian Institute of Technology	2005/2006/2007
2.	Senior Research Fellowship	Indian Council of Medical Research, New Delhi	2009/2011
3.	Demonstrator cum Tutor in six National FISH Workshop	All India Institute of Medical Sciences, New Delhi	2006, 2007, 2008, 2009, 2010, 2012, 2018
4.	Best Poster Award	Indian Society for the Study of Reproduction and Fertility (ISSRF	2012
5.	Organize a Symposium on Impact of Endocrine Disrupters on Reproductive	All India Institute of Medical Sciences, New Delhi	2013

	Health		
6.	Organize a "National Workshop on Molecular Cytogenetics: In House FISH Probe Production	All India Institute of Medical Sciences, New Delhi	2018

8. Service Offering:

Microdeletion FISH on blood (Interphase/ Metaphase cell), buccal cell, urine cell, solid tissue etc

- Digeorge syndrome (22q11.2)
- William syndrome (7q11.23)
- Prader willi syndrome (15q11.13)
- Retenoblastoma (13q)
- Miller decker syndrome (17p13.3)
- Langer Giedions syndrome (8q24.11)
- 1p36.13
- Wolff Hirschhorn (4p16.3)

Prenatal FISH (Amniotic fluid cells/chorionic tissue)

- Trisomy 21 (Down syndrome)
- Trisomy 18 (Edward Syndrome)
- Triomy 13 (Patau Syndrome)
- Any autosomal aneuploidies (on request)

Karyotyping (only research use)

Sex Chromosome FISH (X, Y, SRY: only research & infertility**)**

Yq Microdeletion PCR (Cover app. 90%**)**

PRINS (Chromosome13, 18, 21, X, Y**)**

QF-PCR (DG, WS, PWS, RB, MD, Langer-Giedions, Trisomy 13, 18, 21, etc.**)**

DNA Microarray

- WGA of Microdeletion Syndrome cases through Microarray
- Primary Testicular Failure / POF/PCOS cases

Epigenomics of Primary Testicular Failure

- Methylation study of Primary Testicular Failure/PCOS
- miRNA study of Primary Testicular Failure/PCOS

Short term Training on Molecular Cytogenetics Techniques

9. Publications in indexed journals

- Sharma P, **Jain M**, Halder A*. Whole Exome Sequencing identifies rare variants in obesity- and hyperinsulinemia-related genes in PCOS patients with high BMI and fasting insulin. Reproductive Sciences (EMID:43703f6e8f375326; submitted)
- Halder A, Kumar H, Sharma P, Sharma M, **Jain M**. Polycystic Ovary Syndrome (PCOS): An Overview. Journal of Human Reproductive Sciences 2022 (submitted; JHRS_41_22)
- Kumar H, Halder A, Sharma M, Kalsi AK, **Jain M**. Dihydrotestosterone: a potential biomarker of hyperandrogenaemia in PCOS. **J Clin and Diag Res** 2022; 16(2): QC09-QC14.
- Sharma A, Halder A, Kaushal S., **Jain M.** Identification of Genomic imbalances (CNVs and LOH) in Sertoli Cell Only Syndrome patients through Cytoscan Microarray**. GENE, 2021**; 801(7):145851. **(As a Corresponding Author)**
- Halder A, Chaudhary I, **Jain M.** The sex ratio trajectory in mouse. Reproductive Biology 2021; 21 (3): 100514, 7 pages.
- Singh M, **Jain M**, Bose S, Halder A, Nag T, Amit Dinda A, Mohanty S. 22(R)-hydroxycholesterol for dopaminergic neuronal specification of MSCs and amelioration of Parkinsonian symptoms in rats. Cell Death Discovery. 2021;7:13-17.
- Aggarwal D, Wadhwa N, Arora T, Rajaram S, Diwaker P, Halder A, **Jain M**, Mishra K. Human telomerase RNA component (hTERC) gene expression and chromosome 7 ploidy correlate positively with histological grade of cervical intraepithelial neoplasia. Cytopathology. 2021 Apr 13. doi: 10.1111/cyt.12978.
- Halder A, Kumar H, Sharma M, **Jain M**, Kalsi AK. Serum Anti-Müllerian hormone (AMH): most potential biomarker of PCOS from North India. Ind J Med Res (IJMR_4608_20; R2)
- Sharma A, Halder A, Kaushal S., **Jain M.** Intra-individual genomic variation study in tissues (Blood vs. Testis) through SNPs Microarray: Case report in two idiopathic Sertoli cell only Syndrome patients (SCOS). **J Reprod Infertil**. Oct-Dec **2020**; 21(4):298-307. **(As a Corresponding Author)**
- Jain P, Wadhwa N, Joshi MK, **Jain M**, Halder A, Mishra K. Cellular mesenchymal epithelial transition (C-MET) gene copy number variation in gastric adenocarcinoma: A pilot search for new marker for targeted therapy in HER-2/neu resistance. **Indian J Pathol Microbiol**. **2020**; 63(1): 86-89.
- Rishi I, Halder A, Sharma JB, **Jain M**, Sharma M. Single Strand Conformation Polymorphism and Sequencing of HS6ST2 Gene in Patients of Idiopathic Premature Ovarian Failure. Journal of Clinical and Diagnostic Research. 2020; 14(2): GC01-GC08.
- Kalsi AK, Halder A*, **Jain M**, Srivastava A (corresponding author). Association of Cadmium, Chromium, Manganese and Lead with hyperprolactinemia. Journal of Clinical and Diagnostic Research 2020; 14: 4-7.
- Kalsi AK, **Jain M**, Halder A*. An investigation on bone mineral density in hyperprolactinemia. Journal Endocrinology and Reproduction 2020; 24 (2): 107-121.
- Kalsi AK, Halder A, **Jain M**, Chaturvedi PK, Mathew M, Sharma JB. Association of raised levels of IL-4 and anti-TPO with hyperprolactinemia. **Am J Reprod Immunol. 2019** Jan 4:e13085. doi: 10.1111/aji.13085 (Journal Impact Factor: 2.91; Cited by 01)

- Kalsi AK, Halder A, **Jain M**, Chaturvedi PK, Sharma JB. Prevalence and Reproductive Manifestations of Macroprolactinemia. **Endocrine. 2018** Sep 29. doi: 10.1007/s12020-018-1770-6 (Journal Impact Factor: 3.87; Cited by 04)
- Kumar P, **Jain M**, Kalsi AK, Halder A. Molecular characterization of a case of dicentric Y presented as nonobstructive azoospermia with testicular early maturation arrest. **Andrologia. 2018** Mar;50(2). doi: 10.1111/and.12886 (Journal Impact Factor: 1.45; Cited by 01)
- Halder A, **Jain M**, Kalsi APK. Mosaicism in 22q11.2 Microdeletion Syndrome. J Clin Diagn Res. 2018; 12: 1-6.
- Halder A, Kumar P, **Jain M**, Iyer VK. Copy number variations in testicular maturation arrest. **Andrology 2017**; Feb 19:1-13. (Journal Impact Factor: 3.45; Cited by 09)
- Halder A, Kumar P, **Jain M**, Kalsi AK Genomics: Tool to predict and prevent male infertility. **Frontiers In Bioscience, Scholar 2017;** 9:448-508. (Journal Impact Factor: 2.3; Cited by 07)
- Halder A, Kumar P, **Jain M**. Primary testicular failure: A search for ideal biomarkers. **Indian J Endocr Metab. 2017**; 21. (Journal Impact Factor: NA; Cited by NA)
- Halder A, **Jain M,** Kalsi AK. SNP Microarray in FISH Negative Clinically Suspected 22q11.2 Microdeletion Syndrome. **Scientifica (Cairo). 2016**; 2016:5826431. (Journal Impact Factor: 0.42; Cited by 3)
- **Jain M**, Kalsi AK, Srivastava A, Gupta YK, Halder A. High Serum Estradiol and Heavy Metals Responsible for Human Spermiation Defect-A Pilot Study. **J Clin Diagn Res. 2016** Dec; 10(12):RC09-RC13. (Journal Impact Factor: 0.41; Cited by 5)
- Halder A, **Jain M** and Kumar P. Primary Testicular Failure: An Overview **J Clin Diagn Res 2015**; 3:1 (Journal Impact Factor: 0.41; Cited by 4)
- Halder A, **Jain M** and Chaudhary I. Suspected microdeletion syndromes and molecular cytogenetic techniques: an experience with 330 cases. **Molecular Cytogenetics 2014;** 7(Suppl 1):O7. (Journal Impact Factor: 2.66; Cited by 1)
- Chaudhary I, **Jain M,** Halder A. Sperm Sex Ratio (X: Y Ratio) and its Variations. **Austin J Reprod Med Infertil 2014; 1:1**. (Journal Impact Factor: NA; Cited by NA)
- **Jain M**, Mohan V, Chaudhary I, Halder A. Sertoli cell only syndrome and glaucoma in a SRY positive XX infertile male. **JCDR; 2013:** 7 (7): 1457-1459 (Journal Impact Factor: 0.41; Cited by 04)
- A. Halder and **Jain M** Cytogenetics to Cytogenomics: Transition from Chromosome to DNA Sequence. **Global Journal of Human Genetics & Gene Therapy. 2013;** 1: 90-104 (Journal Impact Factor: NA; Cited by NA)
- Halder A, **Jain M**, Chaudhary I, Kumar G, T. Das & Y. K. Gupta "Dark-coloured semen in nonobstructive azoospermia: a report of four cases." **Andrologia 2013**; Feb 28. doi: 10.1111 / and. 12078. (Journal Impact Factor: 1.45; Cited by 03)
- Halder A, **Jain M**, Chaudhary I "Rapid Detection of Chromosome X, Y, 13, 18 & 21 Aneuploidies by Primed In Situ Labeling/Synthesis (PRINS) Technique." **Indian Journal of Human Genetics 2013**; 19 (1): 14-17. (Journal Impact Factor: NA; Cited by 02)
- Halder A, **Jain M**, Chaudhary I, Gupta N and Kabra M. Fluorescence *in-situ* hybridization (FISH) using non-commercial probes in the diagnosis of clinically suspected microdeletion syndromes: an experience with 301 cases. **IJMR 2013**; 138: 135-142. (Journal Impact Factor: 1.661; Cited by 04)

- **Jain M**, Halder A. Sertoli cell only syndrome: Status of sertoli cell maturation and function. **Indian J Endocr Metab 2012**; 16: S514-515. (Journal Impact Factor: NA; Cited by 05)
- Halder A, **Jain M**, Chaudhary I, Varma B Chromosome 22q11.2 microdeletion in monozygotic twins with discordant phenotype and deletion size. **Molecular Cytogenetics 2012;** 5:13. (Journal Impact Factor: 2.66; Cited by 17)
- Halder A & **Jain M**. Molecular Cytogenetics Manual. **2012.**
- Halder A, **Jain M**, Chaudhary I, Kabra M. Prevalence of 22q11.2 microdeletion in 146 patients with cardiac malformation in a referral hospital of North India. **BMC Medical Genetics 2010**; 11: 101. (Journal Impact Factor: 2.45; Cited by 14)
- Yadav N, Kanjirakkuzhiyil S, Kumar S, **Jain M**, Halder A, Saxena R, Mukhopadhyay A. The therapeutic effect of bone marrow-derived liver cells in the phenotypic correction of murine haemophilia A. **Blood 2009** Nov 12; 114(20): 4552-61. (Journal Impact Factor: 9.775; Cited by 19)
- Halder A, **Jain M**, Kabra M, Gupta N. Mosaic 22q11.2 micro deletion syndrome: diagnosis and clinical manifestations of two cases. Halder **Molecular Cytogenetics 2008;** 1:18 doi: 10.1186/1755-8166-1-18. (Journal Impact Factor: 2.66; Cited by 24)

Book Chapters

- **Jain M**, Kalsi AK, Kumar P, Halder A. The Human Y chromosome. Basics of Human Andrology-A Textbook, Springer. 2017 Jul: 77-98. DOI: 10.1007/978-981-10-3695-8_7.
- **Jain M**, Kumar P, Venkateswaran Iyer, Halder A. Primary Testicular Failure. Basics of Human Andrology-A Textbook, Springer. 2017 Jul: 417 436. DOI: 10.1007/978-981-10-3695-8_24.

11. Published Abstracts

1. Kalsi AK, Halder A, **Jain M**. An investigation on bone mineral density in hyperprolactinemia. Indian Journal of Endocrinology and Metabolism 2019; 23 (suppl 1): pp. S36 (IJEM_314_19)
2. Sharma A, **Jain M**, Halder A, Kumar Rajeev, Kaushal Seema SNP Microarray study in Sertoli Cell Only Syndrome (SCOS). ISSRF, JNU, New Delhi, 22-25 Feb 2019.
3. Kalsi AK, Halder A, **Jain M**, Srivastava A, Sharma JB. Association of Cadmium, Chromium, Manganese and Lead with hyperprolactinemia. ISSRF, JNU, New Delhi, 22-25 Feb 2019.
4. Halder A, Kumar H, Kalsi AK, **Jain M**. Dihydrotestosterone (DHT): a potential biomarker of hyperandrogenaemia in polycystic ovary syndrome. Ind J End Metab 2018 suppl. IJEM_429_18R2.
5. Kalsi AK, **Jain Manish**, Sharma JB, Chaturvedi PK, Srivastava A, Halder A. Macroprolactinemia: Prevalence and etiopathologic associations. Gynecological endocrinology, the 18th World Congress; Florence, Italy, 7-10March 2018.
6. Halder A, Kumar P and **Jain M**. Primary testicular failure: a search for ideal biomarkers. Ind J End & Meta 2017; 21 (suppl 1): pp. S2. March issue (IJEM_420_16)
7. Halder A, Kumer H, Kalsi AK, **Jain M**. Polycystic ovary syndrome: The pros and cons of various diagnostic criteria and investigation to find out associations of various factors implicated with PCOS. Ind J Endoc Metab 2017 suppl (poster no. 123; IJEM_466_17)
8. Kalsi AK, **Jain M**, Halder A. Macroprolactinemia: prevalence and etiopathologic associations. Ind J End Metab 2017 suppl (poster no. 144; IJEM_482_17)

9. Halder A, Kumar P and **Jain M**. Genomic and epigenomic factors in male infertility. In: Cross breed male infertility and bovine genomics. Edited by De S, NDRI, Karnal, India. 2016;pp.80.(http://cbp.icar.gov.in/Data/Coordinator/7100/Mannual%20S%20De%20Cross % 20 breed%20male%20infertility.pdf)
10. Halder A, **Jain M**, Chaudhary I, Mohan V, Kumar P. Suspected microdeletion syndromes and molecular cytogenetic techniques: an experience with 330 cases. Molecular Cytogenetics 2014; 7 (Suppl 1): 20 (O7). DOI: 10.1186/1755-8166-7-S1-O7. ISSN: 1755-8166.
11. Halder A, **Jain M**, Kumar P. Primary Testicular Failure: Genotype Phenotype Correlation of 140 cases. Andrology 2014; 2 (suppl. 1): 66-67 (poster no.16).
12. **Jain M**, Halder A. A Preliminary Study on Human Spermiation Defect. Ind J Hum Genet 2014; 20 (suppl 1): S116.
13. Halder A, **Jain M**, Chaudhary I, Mohan V, Kumar P. Suspected microdeletion syndromes and molecular cytogenetic techniques: an experience with 330 cases. In 63rd annual conference of ASHG 2013, Boston, USA (3246T), p583
14. **Jain M**, Halder A. Sertoli cell only syndrome: Status of sertoli cell maturation and function. Indian J Endocr Metab 2012; 16: S514-515.