

## Professional Summary

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- Expert in **Immunohistochemistry, Confocal microscopy, advanced flow cytometry and stem cell biology assays**
- Expert knowledge of **Nextgen sequencing**, library preparation and next gen data analysis using **R and machine learning algorithms**.
- Multidisciplinary skills in advanced cancer and clinical research methodologies, expert of application of regulatory guidelines **ICH-GCP, NHMRC, FDA and GLP**.
- Possess extensive experience in **TEACHING undergraduate university students and mentoring honors students** (multiple courses at Monash Uni, supervision at Anand Agri Uni). Current cosupervisor of undergraduate research courses (300892 and 300910 Medical Science Projects and Summer research projects at WSU in 2020)
- **Excellent Project Management skills**, met tight deadlines, simultaneously executed **multiple projects both independently and in team**, generated quality data.
- **Problem solver** with **expertise in molecular biology techniques** and speedy trouble shooting.
- **Team and relationship builder** with experience in managing internal and external productive collaborations, **authored more than 10 research** papers in reputed peer reviewed journals., grant writing (assisted in Data preparation and writing of ARC grants)
- **Highly communicative and cooperative, active listener, innovative researcher**
- **Public speaker** I delivered several talks to large audiences and received awards for best oral presentation at ComBio conference (Melbourne, 2015), ICCB Annual Conference (Hyderabad, 2014), ICBB (Facilitator for Technical Session, Pune, India, 2014), Annual meeting of Society of Reproduction Biology (Speaker, 2014).

## EDUCATION

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### **Ph.D.: Biochemistry and Molecular. Biology (2017)**

Monash University - Clayton, Vic 3800

Thesis Title: Role of Negative Regulators of Nuclear Import and the Bidirectional Transporter Importin 13 in Spermatogenesis and Lineage specification.

For two of my PhD sub-projects I utilised complex cell biology assays, molecular cloning, gene editing, protein-protein interaction and trafficking assays, flow cytometry, microscopy and immunohistochemistry on mouse tissues and sperm which led to 2 first author publications and one co-authored. I have also received many presentation awards during conferences and meetings. For the remaining PhD sub-project I utilised extensive stem cell differentiation assays, RT, qPCR, flow cytometry, advanced live cell microscopy on Imp13 KO ESC derived from Imp13 KO mouse embryos (utilising genetraping) to uncover the role of Imp13 in early embryonic differentiation (submitted for publication).

### **Master of Science: Animal Genetics and physiology**

Thesis Title: Genetic characterisation of Indigenous livestock breeds of Gujarat, India  
Anand Agricultural University - Anand, Gujarat, India.

During my Masters I did two projects in which I utilised capillary electrophoresis for molecular genotyping of genetic breed of Livestock using Microsatellite and for the other one, I have identified signature genes and proteins (cytokines) involved in high milk production of buffaloes utilising high end chromatography and 2D gel electrophoresis. More than 5 Publications from my work. Received International travel award from IMG, Tokyo and received best presentation awards.

### **DVM: Veterinary medicine**

Indira Gandhi Agricultural University - Raipur, C.G, India.

## **AWARDS**

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- Best presentation Award: in ComBio 2015; 28th Sep -1st Oct 2015. Melbourne Australia.
- Best Presentation Award: in International Conference of B echnology and Bioinformatics 1-2nd Feb 2014 Pune, India.
- Monash International post graduate scholarship 2008
- International student award from faculty of Medicine, Monash University 2014
- Student Oral Presentation, International Mammalian Genome Society: Invited to attend and present paper in 21st IMG, 2007, Kyoto, Japan.
- Travel Award from International Mammalian Genome Society to attend and present paper in 21st IMG 2007, Kyoto, Japan.
- Travel Award by DST Govt of India. 2008.
- Prof. P.K. Pani Research Award 2008; Shafi Shennaz, **Fatima Shadma**, D. N. Rank, K. Khanna, C. G. Joshi, AAU, Anand.
- Monash University travel award 2014.
- Selected as a team lead in Multi Institutional Teachers training program, held in AAU, funded by Gujarat State, Biotechnology Mission, India, in the year 2006 and 2007.

## **SKILLS**

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- Computer clusters (Katana, UNSW)
- Unix commands
- DNA/RNA/PCR/Cloning/qPCR
- Excellent communication skills
- Tissue/ES Cell culture/Transfection
- Flow cytometry
- Histology/Immunohistochemistry
- **Stem cells differentiation/therapy**
- **Next Gen targeted mutation/RNA seq analysis**
- **Bioinformatics/R and Python platform**
- Drug discovery
- Experiment designing, Lab management, maintaining GLP and GCP practices
- Scientific writing/Grant applications

- Team player/leadership
- Cooperative/Flexible

- Advanced confocal microscopy and live cell imaging

## **PEER-REVIEWED PUBLICATIONS ( 180 citations, 103 since 2015, H-index 7.0, 57% First author papers)**

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1. **Shadma Fatima**; Kylie M Wagstaff; Kim G Lieu; Rebecca G Davies; Satomi S Tanaka; Yasuka L Yamaguchi; Kate L Loveland; Patrick P Tam; David Andrew Jans (2017). Interactome of the Inhibitory Isoform of the Nuclear Transporter Importin 13. Published online in BBA - Molecular Cell Research. Volume 1864, Issue 3, March 2017, Pages 546-561. **cited by 7. *SF was responsible for complete designing and execution of experiments, analysis of data, writing and editing of manuscript; techniques used construct designing, protein protein interactions, Y2H, colPs, pull downs, transfection, advanced live quantitative confocal microscopy, FRAP assays, Immunohistochemistry, mouse models.***
2. **Shadma Fatima**, Kylie M Wagstaff, Kate L Loveland, David A Jans (2015). Interactome of the negative regulator of nuclear import BRCA1-binding protein 2. Scientific Reports 03/2015. **Cited by 14. *SF was responsible for complete designing and execution of experiments, analysis of data, writing and editing of manuscript; techniques used construct designing, high throughput protein protein interactions, Y2H, colPs, pull downs, transfection, live quantitative nuclear fluorescence, , Immunohistochemistry, mouse models, sperm Immunofluorescence, Cytoscape, Bioinformatics.***
3. Alex J. Fulcher, Daniela M. Roth, **Shadma Fatima**, Gualtiero Alvisi, and David A. Jans. (2010). The BRCA-1 binding protein BRAP2 is a novel, negative regulator of nuclear import of viral proteins, dependent on phosphorylation flanking the nuclear localization signal. The FASEB Journal. Pp1454-66. **Cited by 43. *SF designed the construct, protein expression in Bacteria, In vitro alpha screening assays.***
4. **Fatima S.**, C.D. Bhong, D.N. Rank and C.G. Joshi. (2008). Genetic variability and bottleneck studies in Zalawadi, Gohilwadi and Surti goat breeds of Gujarat (India) using microsatellites. Small Ruminant Research. Vol. 77: 58-64. **Cited by 50. *SF was responsible for complete designing and execution of experiments, analysis of data, writing and editing of manuscript; techniques used highthrough DNA extraction, microsatellite genotyping, SDS Page, Sanger sequencing, Population genetics, statistical bottleneck analysis.***
5. **Fatima S.**, Bhatt, S.M.; Bhong, C.D.; Rank, D.N. and Joshi, C.G. (2009) Genetic polymorphism study of IGF-I gene in buffaloes of Gujarat. Buffalo Bulletin, 28 (3). pp. 159-164. **Cited by 11. *SF sequenced and identified two novel SNPs in IGF1 gene of buffalo, SDS Page based polymorphism identification.***
6. Chaudhari M.V., Parmar S.N.S., Joshi C.G., Bhong, C.D., **Fatima S.**, Thakur M.S. and Thakur S.S. (2009). Molecular characterization of Kenkatha and Gaolao (Bos indicus) cattle breeds using microsatellite markers. Animal Biodiversity and Conservation. 32.2. **Cited by 26. *SF mentored***

*master's student Chaudhari MV and assisted in using automated microsatellite genotyping for characterisation of Breeds of Bos indicus.*

7. R.M. Nandre, B.S. Yadav, **S. Fatima**, G. Bhupal, H.J. Derashri, A.K.Barate, C.G. Joshi. (2013). Assessment of variations in Indian *Bubalus bubalis* seminal plasma proteins analyzed by two-dimensional polyacrylamide gel electrophoresis during winter and summer seasons. Iranian Journal of Vet. Research. No. 1:1-8. **Cited by 7. SF mentored master by research student RM Nandre and help him design his experiment and optimised 2D gel electrophoresis for identification of expression of differential proteins**
8. Shafi, S., **Fatima S.**, RankD.N., Khanna K., Joshi C.G. (2008). Growth hormone gene polymorphism and its correlation with different traits in Bantam and White Leghorn chicken. Indian J. Polut. Sci. 43(2). **Cited by 7. SF analysed the RFLP data and wrote the manuscript.**
9. S. K. Anand, **Fatima Shadma**, C.G. Joshi and J. H. Purohit (2006). Molecular characterization of Escherichia.coli using PCR single strand conformation polymorphism analysis of 16S rRNA gene. Indian J. Polut. Sci. 41(1): 1-5. **Cited by 4. SF analysed the RFLP data and wrote the manuscript.**
10. C.D. Bhong, **Fatima S.**, M. N. Brahmhatt and A. Roy. (2007). Verotoxic E.coli (VTEC): An Emerging Pathogen in India. In Indian Journal of Field Veterinarians. 3 (1): 65-67. **SF contributed to writing and editing of the manuscript**

## Conference Proceedings

1. M. Sajjad Khan, Salma Khanam, M.D. Kharya, **Shadma Fatima**. (2008) Antioxidant and anti-ulcer potential of a new diarylheptanoid of Ginger Published in a Conference entitled Status of medical biotechnology research in the state of M.P - Past accomplishment, current trends and challenges ahead held at BHMRC Bhopal on. 14-16 Feb 2008.
2. C.G. Joshi and **Shadma Fatima** (2008). Status of Molecular Genetics in poultry breeding in Silver Jubilee Annual Conference & National Symposium of Indian Poultry Science Association (IPSACON-2008) on Poultry production in India: Threats and opportunities. PP 117 - 122.

## Manuscripts in Review

1. **Shadma Fatima**, Kylie M. Wagstaff, Sue Lim, Jose Polo, Julia C. Young, Patrick Tam and David A. Jans (2020). The bidirectional nuclear transporter Importin 13 is critical for cell survival during embryonic stem cell differentiation, submitted to Stem cell research.
2. Glenn Marshall, **Shadma Fatima** et al., Targetted MAPK inhibition in-combination with dabrafenib/trametinib as a combination therapy of BRAF-mutant metastatic melanoma. 2020. Submitted to Scientific Reports (under 2<sup>nd</sup> revision)
3. Carol A. Gano, Tim Failes, Greg Arndt, David Mahns, **Shadma Fatima**, Jens R. Coorsen, Ahmad Saedisomeolia, Joseph Bucci, Paul de Souza, Fatemeh Vafae4 and Kieran F. Scott.(2020) Effect of cellular genotype on pairwise synergy profiles of phytochemicals in prostate cancer cells. Under preparation. Submitted

## **Projects Contributing to**

1. **Shadma Fatima**, Kieran Scott, Fatemeh Vafae (2020). Advances and challenges associated with Liquid biopsy based cancer diagnosis.
2. Adrian Li, **Shadma Fatima**, Fatemeh Vafae, Viive Howell et al. (2018) Identifying marker genes whilst genetic profiling of EGFR enhanced glioblastoma using machine learning.
3. Glenn Marshall, **Shadma Fatima** et al., (2019) Mutational Landscape of Paediatric Acute Lymphoblastic and acute myeloid leukemia in down syndrome patients by next-generation sequencing.
4. Glenn Marshall, **Shadma Fatima** et al. (2019) Identifying the correlation of MUC16 variations and multiple drug toxicity in Leukemic patients.

## **Work History**

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**Postdoctoral Research Fellow. Medical Oncology Group**

02/2020 to now

**Ingham Institute of Applied Research . Liverpool NSW**

**Postdoctoral Research Associate. Vafae Laboratory, School of Biotechnology and Biological Sciences, UNSW, Sydney**

Working on prostate cancer research, utilising RNA seq and ScRNA seq, mouse models, marker identification, validation of pharma compounds

Working on benchmarking assays for liquid biopsy-based miRNA marker identification for cancer diagnosis

**Clinical Research Manager/Coordinator (Cancer)**

06/ 2019 – 12/ 2019

**Ingham Institute of Applied Medical Research, Liverpool, NSW.**

**Chris O'Brien Life House, Camperdown, NSW**

- Worked on more than 10 cancer trials (mainly involving Lung cancer, Testicular cancer, Prostate cancer and Glioblastoma)

Utilised my expertise of clinical research protocols, experimental design, ethics submissions and grant applications skills in a very fast-paced and high patient recruitment site.

- Contributed to the development of new research protocols and ensure the effective management of the study and safety requirements of the participants are fully considered
- Generated creative solutions to new and existing problems by demonstrating initiative relative to the position held
- Conducting clinical research in accordance with TGA, ICH GCP, the NHMRC National Statement on Ethical Conduct in Human Research and the Australian Privacy Principles and LH Privacy Policy.
- Participating in study monitoring/auditing as required. Collaborate effectively with relevant personnel to facilitate monitoring of data, internal company audits and external reviews.

**Project Manager**

02/2018 to 08/2018

**School of Biotechnology and Biological Sciences UNSW – Kensington NSW**

- Manage the planning, design, conduct and close out of individual cancer bioinformatics projects, mostly coming from collaborators, relating to biomarker development and validation.
- Coordinate the project data and results to multiple team members as needed, including curation scientists, , scientists, and interpretation manager.

- Worked on adult cancer projects involving Next gen targeted mutation and RNA-seq analysis
- Documenting protocols/developing methods and standards for the process used.
- Contributed to the innovative ideas for successful and smooth running of the project and helping in managing efficient allocation of resources.

### **Research officer**

08/2018 to 03/2019

**CCIA, Randwick** – Sydney, UNSW, Australia

- Manage the planning, design, conduct and close out of individual cancer projects, ethics writing and submission, biomarker development and validation, liaising with collaborators.
- Worked on multiple paediatric cancer project in collaboration with CCIA, Australia- Trying to early detect cancers such as Medulloblastoma and leukaemia in Down Syndrome kids using advance genomic and proteomic tools
- Designing the early diagnostic panels for leukaemia in kids using next gen sequencing and ScRNA sequencing
- Targeting Mycn and P53 to inhibit medulloblastoma growth and relapse.
- Coordinate the project data and results to multiple team members as needed, including curation scientists, genetic counsellors, clinicians, scientists, geneticists and interpretation manager.
- Coordinate with clinicians, facility manager and other staff for ethics approvals, clinical sample collection and data procurement.
- Drug discovery- Identifying the new combination therapy for resistant cancers.

### **Teaching Associate**

2008-2009; 2012-2015

**Monash University** – Clayton, VIC

Career disruption between 2009-2012 and 2016-2018 (maternity and Life threatening accident)

- Taught various Anatomy, Biochemistry, Medicine and Physiology courses to undergraduate students
- Created innovative ways for students to actively engage with the course material
- Foster student-faculty; student-student interaction  
Developed and maintained professional and caring relationships throughout the semesters
- Developed ability to relate positively to colleagues and to share successes and challenges; always took feedback from students and colleagues.
- Engaged students in learning and facilitate best educational practice.
- Utilised the online technical tools for creating electronic forums; share and manage information online: lectures, tests and quizzes

### **Research Associate**

01/2007 to 01/2008

**Anand Agricultural University** – Anand, GJ

- Direct, perform and troubleshoot laboratory bench work (including maintaining accurate written & electronic records).
- Perform in vivo experiments in small animals (rats, mice).
- Supervise and support junior staff and students to ensure they perform their daily responsibilities to satisfaction.
- Analyse and graph data, perform bioinformatic and statistical analysis on results.
- Present research findings at departmental, national and international meetings as required.
- Write abstracts for conferences
- Wrote manuscripts for publication including preparation of figures, tables, and other required documents.
- Assisted in grant writing.
- Accountable for consumable expenditure, ordering in a timely, cost effective manner.
- Worked as Trainer in 1<sup>st</sup> and 2<sup>nd</sup> Multi Institutional Teachers training program, held in AAU, funded by Gujarat State, Biotechnology Mission, India, in the year 2006 and 2007.

- Made recommendations and developed technical design for new application features.
- Oversaw the daily smooth running of Labs.
- Trained professionals and researchers for SOP, GLP and in the proper use of Lab equipments and machines
- **Successfully completed three different projects analysing differential gene and protein expression analysis of mammalian tissues at different physiological stages**

### **Research Fellow**

01/2005 to 01/2007

#### **Anand Agricultural University – Anand, GJ**

- Worked in National Core Laboratory Project Funded by National Bureau of Animal Genetic Resources; India.
- Worked in Gujarat State Biotechnology mission project "Somatotropin mediated gene expression studies in lactogenic pathways of buffaloes", funded by Gujarat Govt.
- Hosted visiting scholars and dignitaries.
- Presented data in many National and International conferences.
- Conducted in-services to train teachers in methods of implementing new framework.
- Worked directly with dean, senior supervisors, principal investigators and collaborators to achieve results.

## **INTERESTS**

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Wild-life explorer, Cooking, Community welfare, Animal rights, Probono consulting and student mentoring  
Cancer Biology, Clinical research, Application of R and Python language in cancer research, Stem cells.

## **AFFILIATIONS**

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- Member, Centre for Oncology Education and Research Translation (CONCERT) Mar 2020-present
- Member of Australian Society of Biochemistry and Molecular Biology, Australia. Oct 2013-present
- Member of International Society for Computational Biology, USA. Jan 2018-present
- Member of International Society for Stem Cell Research- Jan 2019-present
- Member of American Association for Cancer Research (AACR) Mar 2020-present
- Alumnus of Monash University. 2017-present

## **CERTIFICATIONS**

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- Diploma in Leadership and Management-GEMS School of management, Sydney (2016)
- Certified Training and assessment- All Australian training pvt Ltd, Sydney (2017)
- R for Next generation sequencing analysis

## **REFERENCES**

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Can be Provided on request