Johan Ajnabi

PhD Candidate

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Summary

I am a life science researcher working at the interface of mechanobiology, cell biology, and epigenetics. My research examines how mechanical cues at wounds regulate cytoskeletal dynamics and epigenetic programs to control epidermal cell-state transitions during tissue repair and regeneration.

Research Experience

Aug 2019 – Present

Institute for Stem Cell Science and Regenerative Medicine, Bengaluru

Research Scholar

Under supervision of Prof. Colin Jamora

Mechanoregulation in the cutaneous wound response

Investigated how wound-induced mechanical cues regulate the subcellular localization of the *de novo* DNA methyltransferase DNMT3A during epidermal repair. Employed primary keratinocytes, established cell lines and applied molecular biology, biochemistry, fluorescence microscopy, and genetic engineering approaches (bioRxiv: Ajnabi *et al.*, 2026).

Endocytosis-linked integrin signaling in keratinocyte stemness maintenance

Studied a Mindin-integrin-STAT3 signaling axis that sustains keratinocyte stemness through integrin endocytosis and downstream transcriptional activation (bioRxiv: Dam *et al.*, 2025).

Spatial transcriptomic analysis of the immune landscape of vitiligo skin

Profiled immune cell behaviour in patient skin before and after narrow band UV-B treatment. Acquainted with spatial sequencing approaches to study transcriptional heterogeneity within skin tissue; employed immunofluorescence and qPCR techniques (Published article: Dutta et al., 2026).

Study of secreted factors in a transgenic mice model of fibrosis

Studied the role of the extracellular matrix protein Mindin in skin fibrosis using transgenic mouse models. Managed transgenic mouse colonies, gained expertise in primary cell isolation, culture, and transfection, western blotting and analysis (Published article: Rana *et al.*, 2023).

Role of antimicrobial peptides (AMPs) in combating different variants of SARS-CoV2

Worked with multiple cell lines to study the effect of secreted antimicrobial peptide, human cathelicidin (LL37) on SARS-CoV2 entry, trained in FACS, BSLII practices, generated pseudo viruses (Published article: Bhatt *et al.*, 2023).

Maintenace of stem/progenitor state of skin epithelial cells and carcinomas through the autocrine effect of matricellular protein

Worked with primary epidermal cells to understand stemness and cancerous properties regulated by extracellular secreted factor mediated signaling cascades, developed skills in molecular techniques such as qPCR analysis, western blotting, etc. (Published article: Badarinath *et al.*, 2022).

Jul 2017 – Jul 2019

ICAR-National Institute for Plant Biotechnology, New Delhi, India

AIEEA PG Scholar

Master's degree research project under supervision of Dr. Monika Dalal

Identification of *cis*-regulatory regions regulating the expression of *PM19* gene in wheat

Developed in-depth knowledge of literature searching; *in vitro* genome sequence analysis; basic molecular biology techniques like gene and promoter cloning, transient GUS expression analysis, plant tissue culture techniques, transformation, etc. (Published thesis: Ajnabi J, 2019)

Publications

Preprints

1. **Ajnabi J**, Dam B, Gupta E, Saha T, *et al. Actin-dependent mechanotransduction controls nucleocytoplasmic partitioning of DNMT3A through ERK1/2 signaling during cutaneous wound healing.* **bioRxiv**, 2026. *(First author)*
2. Dam B, **Ajnabi J**, Saha T, Shrivastava A, *et al. Mindin-mediated αM-integrin endocytosis activates STAT3 to maintain keratinocyte stemness.* **bioRxiv**, 2025.

Peer-Reviewed Publications

3. Dutta A, Gupta D, **Ajnabi J**, Dam B, *et al. Spatial transcriptomic analysis of the immune landscape following NBUVB treatment of vitiligo skin.* **Clinical & Translational Immunology**, In press, 2026.
4. Dutta S, Islam Z, Das S, *et al.*, **Ajnabi J**. *Harmonizing plant resilience: membrane lipid dynamics in response to abiotic stresses.* **Discover Plants**, 2025.
5. Bhatt T, Dam B, Khedkar SU, *et al.*, **Ajnabi J**. *Niacinamide enhances cathelicidin-mediated SARS-CoV-2 membrane disruption.* **Frontiers in Immunology**, 2023.
6. Rana I, Kataria S, Tan TL, *et al.*, **Ajnabi J**. *Mindin (SPON2) is essential for cutaneous fibrogenesis in a mouse model of systemic sclerosis.* **Journal of Investigative Dermatology**, 2023.
7. Badarinath K, Dam B, Kataria S, *et al.*, **Ajnabi J**. *Snail maintains the stem/progenitor state of skin epithelial cells and carcinomas through autocrine Mindin signaling.* **Cell Reports**, 2022.

Thesis

8. **Ajnabi J**. *Regulation of dnmt3a localization in the cutaneous wound healing response.* PhD Thesis, Manipal Academy of Higher Education (to be submitted).
9. **Ajnabi J**. *Identification of cis-regulatory regions regulating PM19 gene expression in wheat.* M.Sc. Thesis, ICAR-Indian Agricultural Research Institute, 2019.

Academic Background

Degree	Affiliation	Year	Percentage/ OGPA*
M.Sc. (Molecular Biology and Biotechnology)	ICAR-Indian Agricultural Research Institute, New Delhi, India	2019	8.51/10
B.Sc. (Agriculture) Honors	Bidhan Chandra Krishi Viswavidyalaya, West Bengal, India	2017	7.92/10
Higher Secondary (10+2)	West Bengal Council of Higher Secondary Education, West Bengal, India	2012	86.2%
Secondary (10^{th})	West Bengal Board of Secondary Education, West Bengal, India	2010	88.6%

**OGPA: Overall Grade Point Average*

Honors and Awards

Sep 2023	Paeonia Travel Award for attending and presenting my work at the MBI Conference 2023: Mechanobiology in Health and Disease, NUS, Singapore
Jan 2020	Qualified National Eligibility Test in Agricultural Biotechnology for Lectureship by Agricultural Scientist Recruitment Board (ASRB), Department of Agricultural Research and Education, India
Sep 2019	Junior Research Fellowship (JRF) in Life Sciences by Indian Council of Medical Research (ICMR)
Aug 2019	Qualified National Eligibility Test for Lectureship and Junior Research Fellowship (JRF) in Life Sciences by Council for Scientific and Industrial Research (CSIR), India with All India Rank - 20
Jul 2019	Qualified All India Common Entrance for JRF/SRF in Agricultural Biotechnology by Indian Council of Agricultural Research (ICAR), India with All India Rank – 3
May 2019	Junior Research Fellowship (JRF) in Biotechnology by Biotech Consortium India Limited (BCIL), Department of Biotechnology (DBT), India
Mar 2019	Graduate Aptitude Test in Engineering in Life Sciences (GATE-XL) fellowship by Department of Higher Education, Ministry of Human Resource Development, India with All India Rank – 8
Jul 2017	AIEEA-PG Scholarship for master's research in Plant Biotechnology by Indian Council of Agricultural Research (ICAR), India with All India Rank – 1

Presentations/Seminars/Conferences

Sep 2023	Presented poster on "Epigenetic and mechanical regulation of the cutaneous wound healing" (MBI Conference 2023: Mechanobiology in Health and Disease, Singapore).
June 2022	Presented poster on "Understanding the role of DNMT3a in the cutaneous wound healing response using a mouse model" (10th International Conference of Laboratory Animal Scientists' Association (LASA), Hyderabad, India.
Feb 2019	Presented poster on "Identification and characterization of stress responsive PM19 promoter from wheat" (National Agricultural Science Congress, Delhi, India)

References

Prof. Colin Jamora
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