

# Johan Ajnabi

PhD Candidate

BRIC-Institute for Stem Cell Science and Regenerative Medicine (inStem)

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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 **BRIC-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 and activity of the *de novo* DNA methyltransferase DNMT3A during epidermal repair. Employed primary keratinocytes and established cell lines, integrating 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 states in patient skin before and after narrowband UV-B (NB-UVB) treatment using spatial transcriptomic approaches to resolve transcriptional heterogeneity within tissue. Complemented sequencing analyses with immunofluorescence and qPCR validation. (In Press: [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

Investigated the effect of the secreted antimicrobial peptide human cathelicidin (LL-37) on SARS-CoV-2 entry using multiple mammalian cell lines. Trained in BSL-II practices, flow cytometry (FACS), and pseudovirus generation. (Published article: [Bhatt et al., 2023](#)).

### Autocrine regulation of stem/progenitor states in skin epithelium and carcinoma

Investigated how matricellular proteins maintain stemness and tumorigenic properties in epidermal cells via autocrine signaling. Worked extensively with primary epidermal cultures and developed proficiency in qPCR, Western blotting, and pathway-level molecular analyses. (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

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### 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 aM-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

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Degree	Affiliation	Year	Percentage/OGPA*
PhD	BRIC-Institute for Stem Cell Science and Regenerative Medicine, Bengaluru, India	Ongoing	
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 <sup>th</sup> )	West Bengal Board of Secondary Education, West Bengal, India	2010	88.6%

\*OGPA: Overall Grade Point Average

## Languages

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- Bengali (Native)
- English (Advanced)
- Hindi (Limited working proficiency)

## Honors and Awards

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*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

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*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)

## Skills

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*Wet lab* Handling and managing of mouse colonies and experimentation, primary cell culture, confocal and multiphoton microscopy, flow cytometry, genetic engineering, protein purification, BLSII practices, generation of pseduovirus, qPCR, western blots.

*Software* Basics of R, Python, MATLAB, MS Office, GraphPad Prism, Adobe Illustrator

*OS* Linux, Windows

*Soft skills* Responsible, organized, critical thinker, flexible, communicative, team player, patient

## Interests

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Coffee, Wildlife Photography, Piano, Hiking, Traveling

## References

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### Prof. Colin Jamora

*Senior Professor*

Department of Life Sciences, Shiv Nadar  
Institution of Eminence Deemed to be University,  
Gautam Buddha Nagar, Tehsil Dadri, Uttar  
Pradesh - 201314, India

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### Prof. Dasaradhi Palakodeti

*Professor*

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