

## Jitendra Kumar Saini, Ph.D

### Assistant Professor,

Department of Microbiology  
Central University of Haryana,  
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Professional Website: <http://www.cuh.ac.in/microbiology.aspx>



### EDUCATION

- 2006-2010** **Doctorate in Microbiology (Minor in Molecular Biology & Biotechnology).** Dept. of Microbiology, College of Basic Sciences & Humanities, G.B. Pant University of Agriculture & Technology, Pantnagar, India with 80.2%
- 2002-2004** **MSc (Microbiology).** Gurukula Kangri University, Haridwar, India with 66.98 marks
- 1999-2002** **BSc (Industrial Microbiology).** Gurukula Kangri University, Haridwar, India (Distinction in Chemistry) with 68.3% marks
- 2000-2001** **Diploma ('O' level Computer Applications & Software Programming).** The Department of Electronics and Accreditation of Computer Courses (DOEACC), Govt. of India
- 1998-1999** **Intermediate.** Kendriya Vidyalaya 2, B.H.E.L., Haridwar, India (Distinction in Biology) with 68.6% marks
- 1996-1997** **Highschool.** Kendriya Vidyalaya 2, B.H.E.L., Haridwar, India (With Distinction) with 76.8% marks

### RESEARCH INTERESTS

Fermentation, Lignocellulose-based 2<sup>nd</sup> generation biofuel (Bioethanol), Bioprocess optimization, Cellulase enzyme development and scale-up, anaerobic/aerobic microbiology, Strain improvement, Cellulolytic enzyme cocktail/blends for enhanced biomass hydrolysis, Biofuels & Bioenergy, Microbial diversity

### TEACHING INTERESTS

General Microbiology, Industrial Microbiology, Agriculture Microbiology

### TECHNICAL SKILLS

Fermentation (fungal enzymes and bioethanol), Scale-up, Microbial Culture (Aerobic/Anaerobic) techniques, Microscopy, Mutagenesis (physical & chemical), Protoplast fusion, Biochemical/Enzyme Assays, Microbial enzyme production and purification, Biomass pretreatment (acid/alkali, steam explosion, pilot-scale continuous reactor), Biomass characterization, Enzymatic saccharification of cellulosic biomass, Molecular Biology techniques, Native/SDS-PAGE, Response surface methodology (Box-Behnken and Central Composite Rotatable Designs), Ethanol Fermentation, GC, HPLC, YSI analyzer, *In-vitro* methane/gas production technique, Ultrafiltration, Filer press, Pilot scale fermenter (150 L)

### PROFESSIONAL EXPERIENCE

- Mar 2016 –** **Assistant Professor,** Department of Microbiology, Central University of Haryana, Jant-Pali, Mahendergarh, Haryana, India
- Sep 2014-Feb 2016** **Scientific Officer (Consultant).** DBT-IOC Centre for Advanced Bioenergy Research, R & D Centre, Indian Oil Corporation Ltd., Faridabad, Haryana, India
- Jun 2013-Aug 2014** **Research Associate (Junior Consultant).** DBT-IOC Centre for Advanced Bioenergy R & D Centre, Indian Oil Corporation Ltd., Faridabad, Haryana, India
- Mar 2011-May 2013** **Postdoctoral Research Associate.** Dept. of Animal Nutrition, GAD Veterinary and Animal Sciences University, Ludhiana, Punjab, India
- Oct 2007** **Trainee.** Microbial diversity - Isolation & Characterization, Trainee GBPIHED, Kosi-Katarmal, Almora, India
- Jan 2006-Nov 2010** **Research Scholar.** Dept. of Microbiology, College of Basic Sciences & Humanities, G.B. Pant University of Agriculture & Technology, Pantnagar, India
- Dec 2003-Mar 2004** **Dissertation Trainee.** Medical Microbiology Dept. PGIMER, Chandigarh, India

## AWARDS, HONOURS & PRIZES

Nov 2014	Best poster award at ‘International Conference on Emerging Trends In Biotechnology-2014’ held at Jawaharlal Nehru University, New Delhi for paper entitled ‘Second generation bioethanol production from lignocellulosic biomass employing indigenous thermotolerant yeast’
2014	National Eligibility Test (NET-2014) conducted by ICAR/ASRB, India in Agricultural Microbiology
2012	Uttarakhand State Eligibility Test for Lecturership (U-SET-2012) in Life Sciences
2006-2008	University merit fellowship for Doctoral studies at GB Pant Univ. Of Agri. & Tech
2005	Graduate Aptitude Test in Engineering (GATE-2005) with 90.86 percentile score

## PROJECTS WORKED/WORKING

Jun 2013- Continue	<ol style="list-style-type: none"><li>1. Simultaneous saccharification and fermentation process for hexoses derived from lignocellulosic biomass using thermotolerant yeasts <b>Initiated the research on SSF process for bioethanol production at DBT-IOC centre</b></li><li>2. Cellulase enzyme development and scale up</li><li>3. Fungal Strain Improvement for cellulase hyperproduction through Mutagenesis and Genome Shuffling</li><li>4. Microbial Preservation and cell bank of cellulase producing fungi</li></ol>
Jun 2013-Dec 2014	Yeast Immobilization for enhanced ethanol productivity
Mar 2011-May 2013	Rumen microbial diversity in domesticated and wild ruminants and impact of additives on methanogenesis and utilization of poor quality fibrous feed (World Bank Funded ICAR project)
Jan 2006-Nov 2010	Optimization of bioprocess for saccharification of sweet sorghum ( <i>Sorghum bicolor</i> ) bagasse using cellulolytic <i>Aspergillus</i> spp. with enhanced $\beta$ -glucosidase activity, Doctoral Thesis, GBPUA&T, Pantnagar, India
Dec 2003-Mar 2004	Comparison of broth macro- & microdilution antifungal susceptibility testing of Zygomycetes against amphotericin-B, M.Sc Dissertation PGIMER, Chandigarh, India

## RESEARCH AND PROJECT SUPERVISION

Postgraduate research students supervised/co-supervision= 4

Jan 2015-June 2015	One postgraduate (M.Sc.-Biotechnology) dissertation project student (Ms. Seema) under supervision in area of <b>Enhanced cellulase production, optimization and Scale-up using fungal mutant</b> at DBT-IOC Centre for Advanced Bioenergy Research
Jan 2015-June 2015	Co-supervised one postgraduate (M.Sc.-Biotechnology) dissertation project student (Ms. Kanchan) in area of <b>Cellulase hyperproduction by fungal strain improvement through mutagenesis</b> at DBT-IOC Centre for Advanced Bioenergy Research
Jan 2014-May 2014	Co-supervised one postgraduate (M.Tech - Biotechnology) dissertation project student (Mr. Rishabh) in the area of <b>simultaneous saccharification and fermentation process using thermotolerant yeast</b> at DBT-IOC Centre for Advanced Bioenergy Research
Jun 2013-May 2014	First Person Responsible among 4-5 member team for in-house project Simultaneous saccharification and fermentation process for hexoses derived from lignocellulosic biomass using thermotolerant yeasts at DBT-IOC Centre for Advanced Bioenergy Research
July 2013-Dec 2013	Co-supervised one postgraduate (M.Sc-Biotechnology) dissertation project student (Mr. Pranay) in the area of <b>simultaneous saccharification and fermentation process using thermotolerant yeast</b> at DBT-IOC Centre for Advanced Bioenergy Research

## PAPERS (PUBLISHED)

(\* Corresponding authors)

1. **J.K. Saini**, A.K. Patel, M. Adsul, R.R. Singhanian\*. 2016. Cellulase adsorption on lignin: A roadblock for economic hydrolysis of biomass. *Renewable Energy* (Under revision).

2. **J.K. Saini\***, R.R. Singhanian, A. Satlewal, R. Saini, A. Mathur, R. Gupta, D.K. Tuli, M. Adsul\*. 2016. Improvement of wheat straw hydrolysis by Cellulolytic blends of two *Penicillium* spp. *Renewable Energy*. XX: XX (Accepted, In Press). [doi:10.1016/j.renene.2016.01.025](https://doi.org/10.1016/j.renene.2016.01.025)
3. **J.K. Saini\***. 2015. Biofuel: A Ray of Hope for Sustainable Future. *Petroleum & Environmental Biotechnology*. 6(4): 1000229. (Editorial Opinion Article) [doi: 10.4172/2157-7463.1000229](https://doi.org/10.4172/2157-7463.1000229)
4. **J.K. Saini\***, R. Agrawal, A. Satlewal, R. Saini, R. Gupta, A. Mathur, D.K. Tuli. 2015 Second generation bioethanol production at high gravity of pilot-scale pretreated wheat straw employing newly isolated thermotolerant yeast *Kluyveromyces marxianus* DBTIOC-35. *RSC Advances*. 5, 37485-94. [doi: 10.1039/C5RA05792B](https://doi.org/10.1039/C5RA05792B)
5. R. Saini, **J.K. Saini**, M. Adsul, A. Patel, A.S. Mathur, D.K. Tuli, R.R. Singhanian\*. 2015. Enhanced cellulase production by *Penicillium oxalicum* IODBF5 for bio-ethanol application. *Bioresource Technology* 188, 240–246. [doi: 10.1016/j.biortech.2015.01.048](https://doi.org/10.1016/j.biortech.2015.01.048)
6. R.R. Singhanian\*, R. Saini, M. Adsul, **J.K. Saini**, A. Mathur, R. Gupta, D.K. Tuli. 2015. An integrative process for bio-ethanol production employing SSF produced cellulase without extraction. *Biochemical Engineering Journal*. 102, 45–48. [doi:10.1016/j.bej.2015.01.002](https://doi.org/10.1016/j.bej.2015.01.002)
7. **J.K. Saini\***, R. Saini, L. Tewari. 2015. Lignocellulosic agriculture wastes as biomass feedstocks for second generation bioethanol production: Concepts and recent developments. *3Biotech*. 5(4), 337-353. [doi:10.1007/s13205-014-0246-5](https://doi.org/10.1007/s13205-014-0246-5)
8. R.R. Singhanian, **J.K. Saini**, R. Saini, M. Adsul, A.S. Mathur, R.P. Gupta, D.K. Tuli\*. 2014. Bioethanol production from wheat straw via enzymatic route employing *Penicillium janthinellum* cellulases. *Bioresource Technology*. 169: 490–495.
9. M. Adsul\*, B. Sharma, R.R. Singhanian, **J.K. Saini**, A. Sharma, A.S. Mathur, R.P. Gupta, D.K. Tuli. 2014. Blending of crude cellulolytic enzyme preparations from different fungal sources for improved cellulose hydrolysis by increasing synergism. *RSC Advances*. 4: 44726-44732.
10. **J.K. Saini\***, R.K. Anurag, Arti, B.K. Kumbhar, L.Tewari. 2013. Optimization of saccharification of sweet sorghum bagasse using response surface methodology. *Industrial crops and Products*. 44: 211-219.
11. **J.K. Saini\***, Arti, & L. Tewari. 2012. Simultaneous isolation and screening of cellulolytic bacteria: selection of efficient medium. *Journal of Pure and Applied Microbiology*. 6(3):1339-1344.
12. **J.K. Saini**, J.S. Hundal, M. Wadhwa, M.P.S. Bakshi\*. 2012. Effect of level of roughage in the diet on the rumen environment and nutrient utilization in goat and sheep. *Indian Journal of Animal Nutrition*. 29(4):333-338.

#### PAPERS UNDER PREPARATION

13. **J.K. Saini**, M. Adsul, B. Sharma, R. Saini, P. Jain, R. Gupta, A. Mathur, D. Tuli. 2016. Cellulase production by *Trichoderma reesei* mutant showing morphological variations and application in lignocellulose hydrolysis (Manuscript to be submitted to *Enzyme & Microbial Technology*)
14. **J.K. Saini**, R.R. Singhanian, M. Adsul, R. Saini, P. Jain, R. Gupta, A. Mathur, D. Tuli. 2016. Strain improvement of cellulolytic *Penicillium funiculosum* for biofuel applications (Manuscript to be submitted to *Bioresource Technology*)

#### PAPERS IN CONFERENCE PROCEEDINGS

15. **J.K. Saini**, M. Wadhwa, M.P.S. Bakshi\*. 2012. Effect of roughage to concentrate ratio in the diet on the rumen environment and nutrient utilization in goat and sheep *Proceedings of the 8<sup>th</sup> Biennial ANAC conference*.
16. M. Wadhwa, S.K. Vaid, Neerja Sood, **J.K. Saini**, M.P.S. Bakshi\*. 2014. Nutritional evaluation of fruit and vegetable wastes ensiled with wheat straw. *Proceedings of Global Animal Nutrition Conference-2014*.

#### BOOK CHAPTERS

1. **J.K. Saini\***, M. Singh. 2015. Ecology, Applications and Mechanism of PGPR: Fundamentals and Recent Advancements. *In: Recent Advances in Agricultural Microbiology* (Book Chapter submitted to Editors).

2. **A. Satlewal**,# **J.K. Saini**,# R. Agrawal, A. Mathur, D.K. Tuli, M. Adsul\*. 2015. Indian Biofuel progress, GHG emission and GHG savings by biofuels: Comparative assessment with world. *In*: A.K. Chandel, R.K. Sukumaran (Ed.) Sustainable biofuels development in India: an inevitable option to strengthening energy security. Springer-Verlag, Germany. (Book Chapter submitted to Editors). # [Equal contribution by Authors](#)
3. L. Tewari\*, B. Chandra, **J.K. Saini**. 2012. Biological control of fungal phytopathogens by *Trichoderma* spp.: mechanisms of action. *In*: S.C. Sati & M. Belwal. (Ed.) Microbes: Diversity & Biotechnology. Daya Publishing House, New Delhi, pp. 99-117.
4. L. Tewari\*, **J.K. Saini**, Arti. 2012. Bioremediation of pesticides by microorganisms: general aspects and recent advances. *In*: Maheshwari, D.K. & Dubey, R.C (Ed.) Bioremediation of Pollutants. I.K. International House, New Delhi, pp. 24-49.
5. L. Tewari\*, **J.K. Saini**. 2009. *Trichoderma*: padap utpadakta bhadhane wala ek prabhavshali jaiw niyantrak (*Trichoderma*: an effective plant growth promoting bio-control agent). *In*: Gupta, A.K., Singh, B.R. & Ranjan, R. (Ed.) Padap vridhi niyantrak: kya, kyun aur kaise? (Plant growth control agents: what, why and how ?) University press, GB Pant Univ. Of Agri. & Tech., Pantnagar. pp. 198-216. (In Hindi)

## PRESENTATIONS/ABSTRACTS

(\* Presenting authors)

1. **J.K. Saini**\*, M. Adsul, R.R. Singhanian, A. Satlewal, R. Saini, R. Gupta, A. Mathur and D. Tuli. 2015. Improvement of wheat straw hydrolysis by Cellulolytic blends of two *Penicillium* spp. *In*: Bio Processing India-2015, IIT-Madras, Chennai, India on Dec 17-19, 2015.
2. R. Saini\*, M. Adsul, **J.K. Saini**, A. Mathur, D.K. Tuli, R.R. Singhanian. 2015. Strategies to enhance cellulase productivity in bioreactor. *In*: NHBT-2015, CSIR-NIIST, Trivendrum, Kerala, India on Nov 22-25, 2015.
3. **J.K. Saini**\*, R. Agrawal, Rishabh, A. Satlewal, R. Saini, A. Mathur, R. Gupta, D.K. Tuli. 2014. Second generation bioethanol production from lignocellulosic biomass employing indigenous thermotolerant yeast. *In*: ICEBT-2014, JNU, New Delhi on Nov 6-9, 2014.
4. R. Saini\*, M. Adsul, **J.K. Saini**, A. Mathur, R. Gupta, D.K. Tuli, R.R. Singhanian. 2014. Enhanced cellulase production by *Penicillium oxalicum* IODBF5 for bio-ethanol application. *In*: ICEBT-2014 JNU, New Delhi on Nov 6-9, 2014.
5. B. Sharma\*, M. Adsul, R.R. Singhanian, **J.K. Saini**, A.S. Mathur, R.P. Gupta, D.K. Tuli. 2014. Comparative analysis of two different cellulolytic mutants *Trichoderma reesei* Rut C-30 and *Penicillium janthinellum* EMS-UV-8. *In*: ICEBT-2014 JNU, New Delhi on Nov 6-9, 2014.
6. **J.K. Saini**\*, N. Batra, A.K. Sharma, A. Mathur, R.P. Gupta, D.K. Tuli. 2014. Ethanol fermentation with *Saccharomyces cerevisiae* immobilized in alginate beads. *In*: 9<sup>th</sup> International Symposium on Fuels & Lubricants, NCR Delhi.
7. **J.K. Saini**\*, Arti, B.K. Kumbhar, L. Tewari. 2009. Response surface optimization of dilute acid & alkali pretreatment of sweet sorghum bagasse for microbial saccharification. *In*: 4<sup>th</sup> Uttarakhand State Science & Technology Congress (USST), Pantnagar, India.
8. Arti\*, **J.K. Saini**, L. Tewari. 2009. Selection of Indigenous Thermotolerant & High Alcohol Tolerant Isolates of Yeast for Bioethanol Production. *In*: 4<sup>th</sup> Uttarakhand State Science & Technology Congress (USST), Pantnagar, India.
9. **J.K. Saini**\*, Arti, L. Tewari. 2008. Selection of efficient culture medium for isolation and Screening of Cellulolytic Bacteria *In*: International symposium & 49<sup>th</sup> Annual conference of Association of Microbiologists of India (AMI), New Delhi, India.
10. S. Saikia\*, L. Tewari, **J.K. Saini**, Arti, S.K. Tewari, R. Kaushal. 2008. Identification of phosphate solubilising and growth-enhancing microorganisms in rhizosphere of bamboo species. *In*: International Conference organized by National Bamboo mission, GOI, New delhi
11. A. Kapri\*, Ruby, **J.K. Saini**, L. Tewari. 2006. Phosphate solubilising potential and phosphatase enzyme activity of rhizospheric *Trichoderma* sp. *In*: 47<sup>th</sup> Annual conference of AMI, at Barkatullah University, Bhopal, India.

## NUCLEOTIDE SEQUENCE SUBMISSIONS IN NCBI GENBANK (16 submissions)

Rumen Bacteria partial 16S rDNA: JX978441 (*Fibrobacter succinogenes*), KC243426 (*F. succinogenes*), KC197064-67 (*F. succinogenes*), KC251741 (*Streptococcus* sp.), KC243427 (*Streptococcus* sp.), KC461120 (*Streptococcus* sp.), KC461124 (*Streptococcus* sp.), KC461121 (*Streptococcus* sp.), KC461122 (*Streptococcus* sp.), KC461123 (*Streptococcus* sp.),  
Phytase gene, partial cds, GQ489255 (*Trichoderma* sp. KT-28 (LTG-02),  
Cellulolytic fungi: HM370567 (*Aspergillus flavus* F-80), HM370568 (*Hypocrea virens* isolate SE-6)  
Thermotolerant yeasts: KF878950 (*S. cerevisiae*), KF878951 (*Rhodospiridium* sp.), KP192932-33 (*K. marxianus*)

## ACADEMIC CONFERENCES / WORKSHOPS / SEMINARS ATTENDED

1. National Conference 'BioProcessing India-2016' organized jointly by IIT Madras, Anna University and VIT University at IIT-Madras, Chennai, Tamil Nadu India, from Dec 16<sup>th</sup> to 19<sup>th</sup>, 2015.
2. International Conference on Emerging Trends in Biotechnology-2014 organised by Biotech Research Society of India at Jawaharlal Nehru University, New Delhi from Nov 6<sup>th</sup> to 9<sup>th</sup>, 2014.
3. 9<sup>th</sup> International Symposium on Fuels and Lubricants: Advances in Fuels, Lubricants and Alternatives (ISFL-2014) organized by Indian Society for Fuels and Lubricants, Delhi NCR from 15<sup>th</sup> to 17<sup>th</sup> April, 2014.
4. Regional Seminar on Intellectual Property & Innovation Management In Knowledge Era organized jointly by National Research & Development Council (NRDC)-New Delhi & Uttarakhand Council for Science & Technology (UCOST) at GBPUA&T, Pantnagar on 16<sup>th</sup> March, 2010.
5. 4<sup>th</sup> Uttarakhand State Science & Technology Congress (USST) held at GBPUA&T, Pantnagar in November, 2009.
6. International symposium on "Microbial Biotechnology: Diversity, Genomics & Metagenomics" & 49<sup>th</sup> Annual conference of Association of Microbiologists of India (AMI) held at University of Delhi, New Delhi from 18<sup>th</sup> to 20<sup>th</sup> November, 2008.
7. Industry Academia Coordination Workshop "IACW-2008" organized jointly by KGCCI & Uttarakhand Council for Science & Technology (UCOST) at GBPUA&T, Pantnagar on 15<sup>th</sup> November, 2008.
8. Sensitization Workshop on "Biosafety Issues Related To Practicing Agricultural Biotechnology" organized jointly by Deptt. Of Molecular Biology & Genetic Engineering, GBPUA&T & International Service for Acquisition of Agri-Biotech Applications at GBPUA&T, Pantnagar on 3<sup>rd</sup> to 4<sup>th</sup> November, 2008.
9. International conference on "Microbiology: The Challenges Ahead" & 47<sup>th</sup> Annual conference of Association of Microbiologists of India held at Barkatullah University, Bhopal from 6<sup>th</sup> to 8<sup>th</sup> December, 2006.
10. International conference on "Post-Harvest Technology & Value Addition In Cereals, Pulses & Oilseeds" & X<sup>th</sup> Convention of The Indian Society of Agricultural Biochemists at C.S. Azad University of Agriculture & Technology, Kanpur from 27<sup>th</sup> to 30<sup>th</sup> November, 2006

## PROFESSIONAL SERVICE

### Journal Reviewer (# of papers reviewed to date)

RSC Advances (18 manuscripts) | 3Biotech (14 manuscripts) | BioResources (9 manuscripts) | Microbial Ecology (1 manuscript) | Biomass and Bioenergy (5 manuscripts) | Biofuels (4 manuscripts) | Renewable Energy (3 manuscripts) | American Journal of Analytical Chemistry (4 manuscripts) | Industrial crops and products (4 manuscripts) | Journal of the Taiwan Institute of Chemical Engineers (1 manuscript) | Journal of Agricultural Science (1 manuscript) | Mini-Reviews in Medicinal Chemistry (1 manuscript) | African Journal of Microbiology Research (1 manuscript) | Brazilian Journal of Microbiology (1 manuscript) | African Journal of Biotechnology (2 manuscripts) | International Journal of Polymer Science (1 manuscript) | Bioprocess and Biosystems Engineering (1 manuscript) | Biodiversitas:Journal of Biological Diversity (1 manuscript) | Current Biotechnology (1 manuscript) | Archives of Agronomy and Soil Science (2 manuscript) | Cellulose Chemistry and Technology (1 manuscript) | International Journal of Medical Microbiology and Tropical Diseases (1 manuscript) |



**Member of Reviewer/Editorial Board:**

- Editorial Board member of *Waste Recycling Research* (Since June 2015)
- Editorial Board member of *African Journal of Biotechnology* (Since Nov 2015)
- Editorial Board member of *Journal of Petroleum and Environmental Engineering* (Since May 2015)
- Editorial Board member of *International Journal of Research in BioSciences* (Since 2015)
- Editorial Board member of *International Journal of Contemporary Microbiology* (Since 2015)
- Editorial Board member of *International Journal of Medical Microbiology & Tropical Diseases* (Since 2015)
- International Reviewer Board of *American journal of Analytical Chemistry* (Since 2014)
- International Reviewer Board of *Nature Energy* (Since January 2016)

**Member of Co-ordination committee:**

- 4th Uttarakhand State Science & Technology Congress-2009 (10-12 Nov 2009), GBPUAT, Pantnagar.
- Training on Water Testing organised by CPCB, & MoEF, Govt. Of India, New Delhi at Dept. of Microbiology, GBPUA&T, Pantnagar (Dec 2006).

**Invigilator and Evaluator of University Entrance Examination:**

- Acted two times as both Invigilator and Evaluator of the Combined Undergraduate Entrance Examination of the GAD Vety. & Animal Sciences Univ. Ludhiana (CET-2011 and CET-2012)

**PROFESSIONAL ASSOCIATION & MEMBERSHIPS**

<b>2014-</b>	Member of Asian Federation of Biotechnologists (AFOB)
<b>Dec 2006-</b>	Life Member of Association of Microbiologists of India (AMI)
<b>2008</b>	Annual Member of Society of Biological Chemists, India

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I do hereby declare that all above furnished information is true and correct to my knowledge and belief.

**Jitendra Kumar Saini**