

BIODATA

Name of the Candidate/Applicant: **Akhil Agrawal**

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Date of Birth: **07-12-1980**

Gender: **Male**

Employment Details:

Post	Duration	Institute	Total Period
Senior Lecturer	03-08-2009 to 31-10-2009	Shri Agersen College, Bharatpur, India	2 months 27 days
Postdoctoral Fellow	09-11-2009 to 15-06-2013	University of Calgary, Canada	3 years 7 months
Assistant Professor	21-06-2013 to till date	Central University of Rajasthan	8 years 1 month

Educational Qualifications:

S.No.	Degree	University	Year of Passing	Thesis topic/Subject studied	% of marks or CGPA
1	Bachelor of Science	University of Rajasthan	2002	Chemistry, Zoology and Botany	67
2	Master of Science	Goa University	2004	Marine Biotechnology	61
3	PhD	TERI University	2009	Petroleum Microbiology (Diversity and abundance of Sulfate Reducing Bacteria in oil fields of India)	NA
3a	Belgium Government Fellowship	Flemish Institute for Technological Research	2007-2008	Petroleum Microbiology (Sandwich fellowship for 13 months to finish part of PhD work in Belgian institute)	NA

Masters, PhD Students and Post-doctoral Fellow

Degree	Thesis Completed/Submitted	Thesis Ongoing
Masters	19	3
PhD	3	3
Postdoctoral Fellows	1 (AIRTF Fellow): Dr. Nur Izzati	

List of Publications

Publication Details	Year
Evaluation of UV-B Protection Efficiency of Mycosporine Like Amino Acid Extracted from the Cyanobacteria <i>Anabaenopsis</i> sp. SLCyA Isolated from a Hypersaline Lake H K Bairwa, G Prajapat, S Jain, I A Khan, L Ledwani, P Yadav, Akhil Agrawal* Bioresource Technology Reports. Just Accepted Manuscript	2022
Modification of desert sand to soil using polymers for its agricultural potential D Kumari, G Prajapat, S Goyal, A Agrawal* Journal of Arid Environments 209, 104899	2022
Control of reservoir souring by incomplete nitrate reduction in Indian oil fields G Prajapat, S Jain, B Lal, M Lavania, A Agrawal* Bioresource Technology Reports, 101302	2022
Synthesis and inhibition studies towards the discovery of benzodiazepines as potential antimalarial compounds D Sharma, A Pareek, H Arya, R Soni, P Rai, A Agrawal, S Nimesh, ... Experimental Parasitology 243, 108411	2022
A holistic approach to determine the enhanced oil recovery potential of hydroxyethylcellulose, tragacanth gum and carboxymethylcellulose S Rellegadla, S Jain, Akhil Agrawal* (IF=6.165) Journal of Molecular Liquids 341, 117334	2021*
Polymers for enhanced oil recovery: fundamentals and selection criteria revisited S Mahajan, H Yadav, S Rellegadla, Akhil Agrawal* (IF=4.8) Applied Microbiology and Biotechnology, 1-18	2021*
Wettability Alteration of Oil-Wet Carbonate by Viscosity Augmented Guar Galactomannan for Enhanced Oil Recovery Rellegadla Sandeep, Shikha Jain, Jitendra Sangwai, Meeta Lavania, Banwari Lal, Lisa Gieg, Aruliah Rajasekar, Achinta Bera, Akhil Agrawal* (IF=4.5) ACS Applied Polymer Materials. Just Accepted Manuscript -2021	2021*
STK35L1 regulates host cell cycle-related genes and is essential for Plasmodium infection during the liver stage of malaria PK Sharma, I Kalia, V Kaushik, D Brunnert, A Quadiri, M Kashif, Akhil Agrawal (IF=2.5) Experimental Cell Research 406 (2), 112764	2021
Evaluation of UV-B Protection Efficiency of Mycosporine Like Amino Acid Extracted from the Cyanobacteria <i>Anabaenopsis</i> sp. SLCyA Isolated from a Hypersaline Lake H K Bairwa, G Prajapat, S Jain, I A Khan, L Ledwani, P Yadav, Akhil Agrawal (IF=1.1) Bioresource Technology Reports. Just Accepted Manuscript	2021*
Impact of Biosurfactants, Surfactin, and Rhamnolipid Produced from <i>Bacillus subtilis</i> and <i>Pseudomonas aeruginosa</i> , on the Enhanced Recovery of Crude Oil and Its Comparison with Commercial Surfactants Sakthipriya N, Ganesh Kumar, Akhil Agrawal , Mukesh Doble, Jitendra S. Sangwai (IF = 3.5) Energy and Fuels, Just Accepted Manuscript	2021
Synergistic Approach to Control Reservoir Souring in the Moderately Thermophilic Oil Fields of Western India Ganshyam Prajapat, Shikha Jain, Rellegadla Sandeep, Pankaj Tailor, Akhil Agrawal (IF =1.1) Bioresource Technology Reports, Just Accepted Manuscript -2021	2021*
Oil reservoir simulating bioreactors: tools for understanding petroleum microbiology Rellegadla S, Jain S and Agrawal A (IF=3.8) Applied microbiology and biotechnology 104, 1035-1053	2020*
An efficient method for DNA extraction from cyanobacteria isolated from hypersaline and marine environments B Bhardwaj, Agrawal A , L Ledwani, ST Vaiphei, S Jain (IF=3.00) Journal of phycology (Accepted) DOI: 10.1111/jpy.12847 55 (3), 733-737	2019
Process optimization and enhanced decolorization of textile effluent by <i>Planococcus</i> sp. isolated from textile sludge	2019

J Chanwala, G Kaushik, MA Dar, S Upadhyay, Agrawal A (IF= 2.8) Environmental Technology & Innovation 13, 122-129	
A Piscibacillus sp. Isolated from A Soda Lake Exhibits Anticancer Activity Against Breast Cancer MDA-MB-231 Cells DK Neelam, Agrawal A , AK Tomer, S Bandyopadhyaya, A Sharma (IF=4.1) Microorganisms 7 (2), 34	2019
An Effective Approach for Enhanced Oil Recovery using Nickel Nanoparticles Assisted Polymer Flooding. Rellegadla S, Bairwa HK, Kumari MR, Prajapat G, Nimesh S, Pareek N, Jain S, and Agrawal A (IF=3.08) Energy and Fuels 32(11), 11212-11221	2018*
Reservoir souring control using benzalkonium chloride and nitrate in bioreactors simulating oil fields of western India Prajapat G, Rellegadla S, Jain S and Agrawal A (IF=3.5) International Biodeterioration & Biodegradation 132, 30-39	2018*
Control of microbial sulfide production by limiting sulfate dispersal in a water-injected oil field Shen Y, Agrawal A , Suri NK, An D, Voordouw JK, Clark RG, Jack TR, Miner K, Pederzoli R, A Benko A, Voordouw G (IF=2.5) Journal of Biotechnology 266, 14-19	2018
Characterization, Phylogenetic Analysis and Potential Applications of Heterotrophic Bacteria Inhabit Sand Dunes of Thar Desert, India DK Neelam, Agrawal A , AK Tomer, PK Dadheech (IF=0.16) J Pure Appl Microbiol 12 (4), 1887-1894	2018
Cyanobacteria as efficient producers of mycosporine-like amino acids Jain S, Prajapat G, Abrar M, Ledwani L, Singh A, Agrawal A (IF=1.28) Journal of Basic Microbiology 9, 715-727	2017*
Neem extract as a green inhibitor for microbiologically influenced corrosion of carbon steel API 5LX in a hypersaline environments Parthipan P, Narenkumar J, Elumalai P, Preethi PS, Nanthini AUR, Agrawal A and Aruliah R (IF=4.5) Journal of Molecular Liquids 240, 121-127	2017
Polymers for enhanced oil recovery: fundamentals and selection criteria Rellegadla S, Prajapat G and Agrawal A (IF=3.8) Applied microbiology and biotechnology 101 (11), 4387-4402	2017*
Electrochemical decolorization of methyl red by RuO ₂ -IrO ₂ -TiO ₂ electrode and biodegradation with Pseudomonas stutzeri MN1 and Acinetobacter baumannii MN3: An integrated approach Sathishkumar K, Sathiyaraj S, Parthipan P, Agrawal A , Murugan K and Aruliah R (IF=4.5) Chemosphere 183, 204-211	2017
Souring in low-temperature surface facilities of two high-temperature Argentinian oil fields Agrawal A , D An D, Cavallaro A and Voordouw G (IF=3.8) Appl Microbiol Biotechnol	2014
Metagenomics of hydrocarbon resource environments indicates aerobic taxa and genes to be unexpectedly common An D, Caffrey SM, Soh J, Agrawal A et al. (IF=6) Environmental science & technology 47 (18), 10708-10717	2013
Acetate production from oil under sulfate-reducing conditions in bioreactors injected with sulfate and nitrate Callbeck CM, Agrawal A and Voordouw G (IF=3.8) Applied and environmental microbiology, AEM. 01251-13	2013
In situ detection of anaerobic alkane metabolites in subsurface environments Agrawal A and Gieg L (IF=4.08) Frontiers in microbiology 4, 140	2013
Toluene Depletion in Produced Oil Contributes to Souring Control in a Field Subjected to Nitrate Injection Agrawal A , Park HS, Nathoo S, Gieg LM, Jack TR, Miner K, Ertmoed R, Benko A and	2012

Voordouw G (IF=6) Environmental Science and technology. 46(2) 1285-1292.	
Simultaneous biosurfactant production and hydrocarbon biodegradation by the resident aerobic bacterial flora of oil production skimmer pit at elevated temperature and saline conditions Okoro C, Agrawal A and Callbeck C (IF=0.165) Life Science Journal 9(3) 356-364	2012
Microbial community succession in a bioreactor modeling a souring low-temperature oil reservoir subjected to nitrate injection Callbeck CM, Dong X, Chatterjee I, Agrawal A , Caffrey SM, Sensen CW and Voordouw G (IF=3.8) Applied Microbiology and Biotechnology 91(3) 779-810	2011
Diversity of culturable sulfidogenic bacteria in two oil–water separation tanks in the north-eastern oil fields of India Agrawal A , Vanbroekhoven K and Lal B (IF=2.5) Anaerobe 16 12-18	2010
Rapid detection and quantification of bisulfite reductase genes in oil field samples using real-time PCR Agrawal A and Lal B (IF=3.6) FEMS Microbiology Ecology 69, 301–312	2009
*Corresponding Author	

List of book chapters, edited books may be indicated separately along with patents in your name.

List of Book Chapters

Application of Biotechnology in Oil and Gas Industries G Prajapat, S Rellegadla, S Jain, Akhil Agrawal Environmental Microbiology and Biotechnology, 113-133	2021
A taxonomical study of mycosporine-like amino acids producing cyanobacteria Shikha Jain, Ganshyam Prajapat and Akhil Agrawal Nova Publication ISBN: 978-1-53613-294-6.	2018
Cyanobacterial sunscreen: past, present and future. Sunscreens: source, formulations, efficacy and recommendations. Jain S., Prajapat G., Ledwani L., Agrawal A. Nova publication ISBN: 978-1-53613-294-6.	2018
Biomedical applications of PLGA particles. Agrawal A., Rellegadla S., Jain S. Elsevier ISBN: 978-0-12-816913-1	2019
Microbial Diversity and Dynamics in Hydrocarbon Resource Environments Prajapat G, Jain S, Agrawal A Springer Singapore ISBN: 978-981-13-8315-1	2019
Application of Nanoparticles-Based Technologies in the Oil and Gas Industry Rellegadla Sandeep, Shikha Jain, Akhil Agrawal In: Ledwani L., Sangwai J. (eds) Nanotechnology for Energy and Environmental Engineering. Green Energy and Technology. Springer, Cham 978-3-030-33774-2	2020

List of Patents

Methods For Microbially Enhanced Recovery of Hydrocarbons G Voordouw, F Gassara and Akhil Agrawal US 2018 / 0135393 A1 and CA2983624A1 <i>Application stage</i>	2018
Composition for enhanced oil recovery injection fluid and process thereof R Sandeep, SJain, M Lavania, J Sangwai, B Lal and Akhil Agrawal Indian Patent Applied 202011045415	2020

List of Conference proceedings

Determining Microbial Activities in Fracture Fluids Compromising Water Reuse or Disposal. Agrawal A , Chatterjee I, Voordouw G, Lomans BP, Kuijvenhoven C and Henderson J SPE 141352	2011
Souring Treatment with Nitrate in Fields from which Oil is Produced by Produced Water Reinjection Voordouw G, Agrawal A , Park HS, Gieg LM, Jack TR, Cavallaro A, Granli T and Miner K SPE 141354	2011
Cyanobacterial mycosporine-like amino acids and their derivatives as natural sunscreen. Jain S., Agrawal A., Ledwani L. Green, Growth, Globalization and Governance: Challenges and Opportunities, Cambridge Scientific Publishers ISBN 978-1-908106-9	2017

Conferences/Seminars/Workshop (in last 5 years):

Invited talks 01:

Name of the meeting	107th Indian Science Congress (Plenary Lecture)
Date(s) & Venue	GKVK University Bangalore 3-7 January 2020
National/International	International
Title of the talk	Challenges and Prospects of Microbiology in Oil and Gas Industry
Your paper published in Conference Proceedings (Y/N) if yes, give details	Yes
Your travel supported by	Yes, by Indian Science Congress

Invited talks 02:

Name of the meeting	7th ISMOS (Offered Talk)
Date(s) & Venue	Halifax, Canada 18-21 June 2019
National/International	International
Title of the talk	Assessing wettability alteration potential and rheological properties of novel polymer for development of biochemical enhanced oil recovery (BcEOR) technology
Your paper published in Conference Proceedings (Y/N) if yes, give details	N
Your travel supported by	Yes, SERB Travel Grant

Invited talks 03:

Name of the meeting	Post Graduate Course on Health Safety and Environment
Date(s) & Venue	22-29 September 2017, University of Toronto, Canada
National/International	International
Title of the talk	Lectures on Health Safety and Environment (HSE)
Your paper published in Conference Proceedings (Y/N) if yes, give details	N
Your travel supported by	Yes, 1500 Canadian Dollars

Invited talks 04:

Name of the meeting	38th All India Rabi Seminar on oil seeds, oil trade and industry
Date(s) & Venue	4-5 March 2017, MOPA, Jaipur, India Mustard Oil Producing Association
National/International	National
Title of the talk	Allyl isothiocynate in mustard oil: a defensive compound against several diseases
Your paper published in Conference Proceedings (Y/N) if yes, give details	Yes
Your travel supported by	MOPA, Rs. 5000/-

Invited talks 05:

Name of the meeting	International Conference on Biotechnology and Nanotechnology
Date(s) & Venue	30th-31st January 2016, IIS University, Jaipur
National/International	International
Title of the talk	Microbiological solutions to problems in oil and gas industries.
Your paper published in Conference Proceedings (Y/N) if yes, give details	Yes
Your travel supported by	IIS University, Rs. 5000/-

Invited talks 06:

Name of the meeting	International Conference on Biotechnology and Nanotechnology
Date(s) & Venue	30th-31st January 2016, IIS University, Jaipur
National/International	International
Title of the talk	Chair Person (Student Presentations)
Your paper published in Conference Proceedings (Y/N) if yes, give details	Yes
Your travel supported by	IIS University, Rs. 5000/-

Invited talks 07:

Name of the meeting	National conference on environmental pollution health hazard and pollution
Date(s) & Venue	11-12 Dec 2015, MSJ College Bharatpur, Rajasthan
National/International	National
Title of the talk	Waste water treatment by nitrate injection in oil fields of Barmer
Your paper published in Conference Proceedings (Y/N) if yes, give details	Yes

Your travel supported by	No
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Attended:

Name of the meeting-1	Workshop on System biology and molecular economy of microbial communities
Date(s) & Venue	3-7 July, 2017, Trieste, Italy (ICGEB-ICTP-APCTP)
National/International	International
Title of the talk	Workshop
Your paper published in Conference Proceedings (Y/N) if yes, give details	N
Your travel supported by	ICTP, Italy, 700 Euros
Name of the meeting-2	International Conference on Environmental Microbiology and Soil Microbiology, a [18-20 September, 2018
Date(s) & Venue	18-20 September, 2018, Ontario, Canada
National/International	International
Title of the talk	Attended
Your paper published in Conference Proceedings (Y/N) if yes, give details	N
Your travel supported by	University of Toronto, 1500 Canadian Dollars
Name of the meeting-3	24th ISCB International Conference (ISCBC-2018)
Date(s) & Venue	11-13 January 2018, Manipal University Jaipur, Jaipur
National/International	International
Title of the talk	An Effective Approach for Enhanced Recovery of Oil using Nanoparticles Mixture
Your paper published in Conference Proceedings (Y/N) if yes, give details	Y
Your travel supported by	DST Rajasthan Project, 1500/-
Name of the meeting-4	58th Annual Conference of Association of Microbiologists of India.]. Oral Presentation
Date(s) & Venue	16-19 Nov 2018, Babasaheb Bhimrao Ambedkar University, Lucknow, India
National/International	International
Title of the talk	Souring control by removing sulfate from injection water using oil field as biofilter
Your paper published in Conference Proceedings (Y/N) if yes, give details	Y
Your travel supported by	UGC MRP Project, 10,000/-
Name of the meeting-5	3rd International Conference in Science and Engineering and Applied Science
Date(s) & Venue	29th-30th June 2014, Calgary, Canada
National/International	International
Title of the talk	Microbiological solution to the reservoir souring in petroleum industry
Your paper published in Conference Proceedings (Y/N)	N

if yes, give details	
Your travel supported by	SERB-DST Travel Grant

Project in implementation/Sanctioned

Project One: IMPRINT2

Title	Development and demonstration of Biochemical Enhanced Oil Recovery (BcEOR) technology for marginal oil wells of western India
Project No.	IMP/2018/000589
Amount in INR	1 Crore 65 lakhs (16.5 million)
Funding Agency	IMPRINT2 (SERB-DST and MHRD) and ONGC TERI Biotech Ltd
Duration	3 years (15 th February 2019- 14 th February 2022)
PI/Co-PI	PI
Facilities Developed	High Pressure Liquid Chromatography, Oil field simulating facilities at high pressure and temperature
Salient features	Surfactant based natural formulation will be developed for western India carbonate and sandstone reservoirs along with ONGC for field trials in western Indian oil fields

Project Two:

Title	Development and Scaleup of Desert Soilification technology (DST) for land reclamation in western Rajasthan
Project No.	DST/SSTP/2018/23
Amount in INR	35 lakhs
Funding Agency	Department of Science and Technology (DST, India)-TTD
Duration	3 year (1 August 2019- 31 July 2022)
PI/Co-PI	PI
Facilities Developed	Cooling Centrifuge and Cyanobacterial Culture tanks
Salient features	Cyanobacterial biomass along with guar polymer will be used for aggregation on sand particles. This will convert sand to soil by increasing water retention capacity and natural fertilizers NPK from cyanobacterial biomass. Cash crops like Guar will be again grown in the land (200 yards trial). Guar is the commodity that have high economic and imprt value. Cain India Ltd/Vedanta working in Barmer will provide Land for field trial. This project will help in uplifting the socio-economic condition of marginal population of Rajasthan.

Project Three:

Title	Development of Biochemical enhanced oil recovery technology for northeastern oil fields of India
Amount	88 lakhs
Funding Agency	Twining R&D Programme 2017-18 (DBT)
Duration	Approved (Probably start from December 2018 for 3 years)
PI/Co-PI	PI
Facilities Developed	Tensiometer for IFT measurement
Outcome	NA

Project Four:

Title	Development of High-Performance Modified Polymers for Enhanced Oil Recovery from Non-Producing Reservoirs
Project No.	CRG_2021_007167
Amount in INR	45 lakhs
Funding Agency	DST CRG
Duration	3 year (31 Dec 2021- 30 Dec 2024)
PI/Co-PI	PI
Facilities Developed	Pumps and ELS Dectector for HPLC
Salient features	Development of high performance polymers

II. Project that were completed/concluded

Project Five

Title	Indo-US Foldscope
Project No.	BT/IN/Indo-US/Foldscope/39/2015
Amount in INR	8 lakhs
Funding Agency	DBT
Duration	1 year (1 August 2018- 31 July 2018)
PI/Co-PI	Co-PI
Facilities Developed	Funding was only for consumables, travel and conducting a foldscope workshop. Budget for facility development was not provided
Salient features	Encourage the public microscopy. We organized hands-on-training workshops (Foldscope-done in Nov 2018) for better understanding of foldscope to students.

Project Six:

Title	Sulfate Reducing Bacteria analysis in the sample from Cairn's oil fields
Project No.	SO7400015068
Amount in INR	4.5 Lakhs
Funding Agency	Cairn India (Pvt) Ltd (Industrial Research Project)
Duration	2 years (Sept 2014 – Aug 2016)
PI/Co-PI	PI
Facilities Developed	Anaerobic Microbes Culture Facility
Salient features	Development of real time PCR method for quick and reliable detection of SRB in oil fields

Project Seven:

Title	Monitoring and control of the sulfate-reducing bacteria (SRB) and souring in the oil fields in Rajasthan, India
Project No.	MRP-Major-MICR-2013-38338
Amount in INR	15 lakhs
Funding Agency	UGC-MRP
Duration	3 years (August 2015-July 2018)
PI/Co-PI	PI
Facilities Developed	Equipment: Incubator Shaker, Water bath and Air conditioner and Refrigerator
Salient features	Development of nitrate and BAC co-injection technology to control souring in western Rajasthan oil fields

Project Eight:

Title	In-silico screening of apicoplast proteome: In search of potential anti-malarials
Project No.	37(1)/14/39/2014-BRNS-1358
Amount in INR	27 Lakhs
Funding Agency	BRNS, DAE
Duration	July 2014-June 2017
PI/Co-PI	Co-PI
Facilities Developed	Equipment: Incubators, Bioinformatics workstation and laboratory
Salient features	In-silico training was completed successfully.

Project Nine:

Title	Mitigation of Microbial Souring in the Oil fields of Western Rajasthan
Project No.	P.7(3)R&D/2016/2270
Amount in INR	10 Lakhs
Funding Agency	DST Rajasthan
Duration	April 2017-March 2020
PI/Co-PI	PI
Facilities Developed	Funding was only for consumables and travel. Budget for facility development was not provided
Salient features	Ongoing

Project Ten:

Title	Development of innovative technology for waste water treatment from textile industrial sites of Pali region, Rajasthan
Project No.	P.7(3)R&D/2016/4895
Amount in INR	4.5 lakhs
Funding Agency	DST Rajasthan
Duration	3 year (1 August 2017- 31 July 2020)
PI/Co-PI	Co-PI
Facilities Developed	Funding was only for consumables, travel and contingency
Salient features	Manipal University Jaipur developed a prototype instrument for decolorization of textile waste from Bagru region. The same prototype is used in this project for waste water treatment from textile industrial sites of Pali region, Rajasthan

Awards and Memberships:

Awards	Details
Best Teacher Award. 2022	Received 1 st Best Teacher Award honored by Central University of Rajasthan
International Travel Award by SERB-DST	To attend 7 th ISMOS Conference at Halifax, Canada, June 18, 2019
Best Business Plan Competition – 3 rd	Team of Dr. Akhil Agrawal, R. Sandeep and Shikha Jain won 2 nd runner up prize in Business Plan Competition held at 5 th Rajasthan

Prize	Science Congress-2017 at Amity University Rajasthan from 13-15 October 2017
JKLU Award for Water and Environment	For outstanding research in Water Conservation and Reuse at 4 th Rajasthan Science Congress-2017 at JKLU University, Rajasthan from 15-17 October 2016
REIL Energy Innovation Award	For outstanding research in Energy Innovation in Oil Sector at 3 rd Rajasthan Science Congress-2017 at Manipal University Jaipur, Rajasthan from 28 Feb-2 March 2015
International Travel Award by SERB-DST	International Travel Award to attend 3rd International Conference in Science and Engineering and Applied Science, Calgary, Canada
International Travel Award by SERB-DST <i>Belgium Government Fellowship, 2006-07</i>	International Travel Award to attend International Summer school on sustainable water management, Antwerp, Belgium <i>Belgium Government Fellowship, 2006-07</i> for research in a University in Belgium by MHRD, Govt of India.
Memberships of Scientific/Academic bodies	Details
Indian Science Congress	Life Membership
International Society for Chemists and Biologists, India	Life Membership
Mewar University, Rajasthan, (Department of Microbiology)	Invited member for Board of Studies and Board of Examination
Association of Microbiologists	Lifetime Member
ASEAN-India Science, Technology & Innovation Cooperation	Nominated HOST (Mentor) for Asean India Research Training Fellowship by DST and FICCI
TATA iON	Nominated as subject matter expert

Akhil Agrawal

21 May 2022

Dr. Akhil Agrawal