


Scientist Profile

Name	Neetu Shahi	
Designation	Senior Scientist	
Qualification	Ph.D (Fish Biotechnology)	
Email Address	neetuicar@gmail.com ; shahineeu@rediffmail.com Neetu.Shahi@icar.gov.in	
Professional experience (Years)	Bacterial pathogens of fish	
Area of Research	Fish	
Expertise	Molecular Biology	
Google scholar link		
ORCID ID	https://orcid.org/0000-0003-0780-6384	
Awards/ Recognitions	<u>Awards and Honors</u>	

International Travel Award from **Department of Biotechnology (DBT)**, India to participate and present paper in **2nd International Mahseer conference** at Chiang Mai, Thailand during 11-15th February 2020.

Received "**Gold medal**" from Coldwater Fisheries Society of India (CFSI) for research contributions in hill aquaculture of India during the year 2018.

Received "**Second Prize**" from Coldwater Fisheries Society of India (CFSI) for photo contest organized during the year 2018.

Received **letter of appreciation** in the year 2017 from **zoological society of India** for **best performance** in poster presentation during All India Congress of Zoology.

Received "Hungarian Scholarship" from Tempus Public Foundation for research stay from November 2015-March 2016 at **NARIC-HAKI, Szarvas, Hungary**

International Travel Award from **Department of Biotechnology (DBT)**, India to participate and present paper in **Aquaculture 2013** at Las Palmas, Gran Canaria, Spain.

Recipient of “**Fellow of Society for Applied Biotechnology, 2013**” from Society of Applied Biotechnology (SAB), Dharward, Karnataka, India

Publication (no.)

- **Research papers**
- **Reviews**
- **Books**
- **Book Chapters**
- **Popular articles**
- **Others**

Research papers

Patil P.K., Mishra, S.S., Pradhan, P.K., Manna, S.K., Abraham, T.J., Solanki, H.G., Shahi, N., et al., 2022. Usage pattern of chemicals, biologicals and veterinary medicinal products in Indian aquaculture. Reviews in Aquaculture. DOI: 10.1111/raq.12688

Rawat S., Shahi N., Mallik S.K., Pathak, R., Singh B., Pande V. 2021. Biocontrol of toxin producing cyanobacterium *Microcystis aeruginosa* by algicidal bacterium *Exiguobacterium acetylicum* strain TM2 isolated from mid-altitudinal Himalayan lake of northern India. International Journal of Current Microbiology and Applied Sciences. 10(11). Doi:10.20546/ijcmas.2021.1011.xx.

Neetu Shahi, Sumanta K Mallik and Debajit Sarma. 2022. Muscle growth in targeted knockout common carp (*Cyprinus carpio*) *mstn* gene with low off-target effects. Aquaculture. 547; 737423. doi.org/10.1016/j.aquaculture.2021.737423.

Krishna Kala, **Neetu Shahi**, Shivam Singh, Surabhi Rawat, Rabinder Singh Patiyal, Veena Pande and Sumanta K Mallik. 2021. New host record of *Vibrio anguillarum* associated with haemorrhagic septicaemia in golden mahseer, *Tor putitora* (Hamilton, 1822) from India. Indian Journal of Comparative Microbiology, Immunology and Infectious Diseases. 42(1); 71-83. Doi:10.5958/0974-0147.2021.00008.8.

Shivam Singh, Sumanta K Mallik, Krishna Kala, **Neetu Shahi**, Richa Pathak, Abhay Kumar Giri, Suresh Chandra, Kushagra Pant, Rabindar Singh Patiyal. 2021. Characterization of *Flavobacterium columnare* from farmed infected rainbow trout, *Oncorhynchus mykiss* (Walbaum, 1792) of central Indian Himalayan region of India. Aquaculture. 544(2021) 737118. <https://doi.org/10.1016/j.aquaculture.2021.737118>.

Sumanta K Mallik., Nupur Joshi., **Neetu Shahi**, Krishna Kala., Shivam Singh et al., 2020. Characterization and pathogenicity of *Aeromonas veronii* associated with mortality in cage farmed grass carp, *Ctenopharyngodon idella*

(Valenciennes, 1844) from the Central Himalayan region of India. Antonie van Leeuwenhoek.
<https://doi.org/10.1007/s10482-020-01478-3>

Bhat RAH, Thakuria D., Pant V., Khangembam KC., Tandel RS., **Shahi N.**, Sarma D., Tripathi G., Krishnani KK and Krishna G. (2020). Antibacterial and antioomycete activities of a novel designed RY 12 WY peptide against fish pathogen. *Microbial Pathogenesis*. 149. 104591.

Neetu Shahi and Sumanta K Mallik. (2020). Emerging bacterial fish pathogen *Lactococcus garvieae* RTCLI04, isolated from rainbow trout (*Oncorhynchus mykiss*): Genomic features and comparative genomics. *Microbial Pathogenesis*. 147, 104368.

Neetu Shahi, Sumanta K Mallik, Krishna Kala, Nupur Joshi, Ravinder S Patiyal, Suresh Chandra, Sivam Singh, Debajit Sarma (2020). Seasonal emergence of benign epidermal tumor in farm-reared adult grass carp (*Ctenopharyngodon idella*) caused by lymphocystis disease virus at Uttarakhand, India. *Aquaculture*. 526, 735408. doi.org/10.1016/j.aquaculture.2020.735408

Sumanta K Mallik, **Neetu Shahi**, Nupur Joshi, Krishna Kala, Suresh Chandra, Debajit Sarma (2019). The emergence of zoonotic *Fusarium oxysporum* infection in captive-reared fingerlings of golden mahseer, *Tor putitora* (Hamilton, 1822) from the central Himalayan region of India. *Transboundary and Emerging Diseases*. DOI: 10.1111/tbed.13367.

Neetu Shahi, Sumanta K Mallik, Monalisa Sahoo, Suresh Chandra, Atul Kumar Singh (2018). First report on characterization and pathogenicity study of emerging *Lactococcus garvieae* infection in farmed rainbow trout, *Oncorhynchus mykiss* (Walbaum), from India. *Transboundary and Emerging Diseases*. 65, 1039-1048.

Neetu Shahi, László Ardó, Gyöngyvér Fazekas, Elen Gócsa, Shivendra Kumar, Norbert Révész, Zsuzsanna Jakabné Sándor, Zsuzsanna Molnár, Galina

Jeney, ZsigmondJeney (2018). Immunogene expression in head kidney and spleen of common carp (*Cyprinus carpio* L.) following thermal stress and challenge with Gram-negative bacterium, *Aeromonas hydrophila*. *Aquaculture International*. 26:727-741.

Shahi N, Sharma P, Pandey J, Bisht I, Mallik S K. (2018). Characterization and pathogenicity study of *Chryseobacterium scophthalmum* recovered from gill lesions of diseased golden mahseer, *Tor putitora* (Hamilton, 1822) in India. *Aquaculture*. 485, 81-92.

Thakuria D, **Shahi N**, Singh AK, Khangembam VC, Singh AK, Kumar S (2017). Conformational analysis of a synthetic fish kisspeptin 1 peptide in membrane mimicking environments. *PLoS ONE* 12(10):e0185892.

Shahi N, Singh A. K, Sahoo M, Mallik S. K, Thakuria D. 2017. Molecular cloning, characterization and expression profile of kisspeptin1 and kisspeptin1 receptor at brain-pituitary-gonad (BPG) axis of golden mahseer, *Tor putitora* (Hamilton, 1822) during gonadal development. *Comparative Biochemistry and Physiology, Part B*. 205, 13-29.

Shahi N, Sarma D, Pandey J, Das P, Sarma D, Mallik S K. 2016. Impact of acid mine drainage on haematological, histopathological and genotoxic effects in golden mahseer, *Tor putitora*. *Journal of Environmental Biology*, 37 (4) 509-515.

Shahi N, Singh A. K, Mallik S. K, Pandey J. 2015. Spermatogenesis and related plasma androgen and progesterone level in wild male golden mahseer, *Tor putitora* (Hamilton, 1822) during the spawning season. *Fish Physiology and Biochemistry*. 41 (4) 909-920.

Mallik S K, Sarma D, Sarma D., **Shahi N**, 2015. Acid mine drainage, a potential threat to fish fauna of Simsang River, Meghalaya. *Current science*, 109 (4) 687-690.

Shahi N, Mallik S.K, Sarma D 2014. Leukocyte response and phagocytic activity in common carp, *Cyprinus carpio* experimentally infected with virulent *Aeromonas allosaccharophila*. *Journal of Ecophysiology and*

Occupational Health. 14(2) 66-70.

Shahi N, Mallik S.K, Sarma D, Sahoo M and Das P. 2014. Corneal hypertrophy in farmed chocolate mahseer, *Neolissochilus hexagonolepis* from Uttarakhand, India. *Journal of Ecophysiology and Occupational Health*. 14(2) 79-82.

Shahi N and Mallik S.K. 2014. Recovery of *Pseudomonas koreensis* from eye lesions in golden mahseer, *Tor putitora* (Hamilton, 1822) in Uttarakhand, India. *Journal of Fish Diseases*. 37:497-500.

Shahi N, Mallik S.K, Sahoo M, and Das P. 2013. Biological characteristics and pathogenicity of a virulent *Aeromonas hydrophila* associated with ulcerative syndrome in farmed rainbow trout, *Oncorhynchus mykiss*, (walbaum) in India. *The Israeli Journal of Aquaculture-Bamidgeh*. IJA_65.2013.926.

Shahi N, Sahoo M, Mallik S.K, Sarma D, and Das P. 2012. The microcystins-induced DNA damage in the liver and the heart of zebrafish, *Danio rerio*. *Toxicological and Environmental chemistry*. 92 (2): 340-349.

Mallik S K, **Shahi N**, Pandey N N. Haldar R S and Pande A. 2010 Occurrence of fish louse (*Argulus* sp.) on Indian snow trout (*Schizothorax richardsonii*) and golden mahseer (*Tor putitora*) in subtropical Himalayan Lake of Bhimtal, Uttarakhand, India. *Indian Journal of animal sciences* 80 (11): 1152-56.

Book chapter/technical article

Mallik, S.K., **Shahi**, N., Singh, S., Patiyal R.S., & Chandra, S., 2020. Ghar mae machiliyo kae liyae prati jaiwik padarth yukt bhojan banana ki karya vidhi. Himjyoti.. ICAR-DCFR Annual Hindi Publication. pp 55-56.

Neetu Shahi & Debajit Sarma. Gene editing in fish farming and its application; *In souvenir of 3rd International symposium on genomics in aquaculture*, 21-23 Jan 2020 at ICAR-CIFA, Bhubaneswar, Odisha, India. pp 102.

Neetu Shahi, Sumanta K. Mallik, Kushagra Pant and

Manisha Gupta 2019. “Antimicrobial resistance-An emerging serious issue globally in microbes”. Himjyoti, pp83-84. ICAR-DCFR publication.

Neetu Shahi. 2019. “Role of women in fish and fisheries of India”. Himjyoti, pp106-107. ICAR-DCFR publication.

Leaflet

Krishna Kala, Shivam Singh, Sumanta Kumar Mallik, Neetu Shahi, Ravinder Singh Patiyal, Suresh Chandra & Debajit Sarma. Warthaman mae vibihn pahadi rajyo mae thandae pani kae jaliyae krishi mae upyog honae wali matsaya dayai. Leaflet number 39, 2020. ICAR-DCFR, Bhimtal.

Abhay Kumar Giri, Ravinder Singh Patiyal, Nityanand Pandey, Sumanta Kumar Mallik, Neetu Shahi & Debajit Sarma. Alternate candidate carps for polyculture in mid-altitudinal thermal regimes. Leaflet number 40, 2021. ICAR-DCFR, Bhimtal.

Neetu Shahi, Sumanta K Mallik, Krishna Kala & Debajit Sarma. *Lactococcus garvieae*; An emerging zoonotic bacterial pathogen of rainbow trout and its mitigation strategies. Leaflet number 46. Feb 2021. ICAR-DCFR, Bhimtal.

Neetu Shahi, Debajit Sarma, Bhupendra Singh, et al. *Tor chelynoides*; The dark mahseer of western Himalayan region of India. Leaflet number 47. February 2021. ICAR-DCFR, Bhimtal.

Sumanta K Mallik, Richa Pathak, Krishna Kala, Neetu Shahi, Suresh Chandra, Abhay Kumar Giri & Ravinder Singh Patiyal. Rainbow trout machiliyo mae chloramine T (95%) kae prayog ki karya vidhi. Leaflet number 48. February 2021. ICAR-DCFR, Bhimtal. (Under All India Network Project on Fish Health-AINP-FH)

Sumanta K Mallik, Krishna Kala, Richa Pathak, Neetu Shahi, Suresh Chandra, Partha Das, Abhay Kumar Giri & Ravinder Singh Patiyal. Machliyo kae liyae pratijyaik padarth yukt bhojan banana ki karya vidhi. Leaflet number

49. ICAR-DCFR, Bhimtal. (Under All India Network Project on Fish Health-AINP-FH)

Sumanta K Mallik, Richa Pathak, Krishna Kala, Neetu Shahi & Shivam Singh. Antibiotics in aquaculture. 2021. Leaflet number 50. ICAR-DCFR, Bhimtal. (Under All India Network Project on Fish Health-AINP-FH)

Sumanta K Mallik, Richa Pathak, Krishna Kala, Neetu Shahi, Partha Das & Amit Saxena. Advisory for responsible use of antimicrobials in rainbow trout production. 2021. Leaflet number 51. ICAR-DCFR, Bhimtal. (Under All India Network Project on Fish Health-AINP-FH)

Sumanta K Mallik, Manisha Gupta, Gunja Gupta, Neetu Shahi, Richa Pathak, Partha Das & Amit Saxena. Antimicrobial resistance in aquaculture: Time is running out. Leaflet number 52. 2021. ICAR-DCFR, Bhimtal.

Gunja Gupta, Manisha Gupta, Richa Pathak, Krishna Kala, Shivam Singh, Neetu Shahi & Sumanta K Mallik. Introduction to different classes of antibiotics. Leaflet number 53. 2021. ICAR-DCFR, Bhimtal.

Sumanta K Mallik, Manisha Gupta, Gunja, Neetu Shahi, Shivam Singh & Suresh Chandra. Covid-19 pandemic & antimicrobial resistance in aquaculture: viz-a-viz. Leaflet number 54. 2021. ICAR-DCFR, Bhimtal.

Sumanta K Mallik, Manisha Gupta, Gunja, Neetu Shahi, Richa Pathak & Krishna Kala. Impact of antimicrobial resistance in rainbow trout production. A pictorial presentation. Leaflet number 55. (Under All India Network Project on Fish Health-AINP-FH)

Sumanta Kumar Mallik, Neetu Shahi, Suresh Chandra & Ravinder Singh Patiyal. Rainbow trout farming during COVID 19 pandemic situations: An advisory for Indian trout farmers. 2021. Leaflet number 56. (Under All India Network Project on Fish Health-AINP-FH)

Advisories

Manisha Gupta, Gunja, Sumanta K Mallik, Neetu Shahi and Debajit Sarma. 2020. Pahadi Jalyie Krishi mae antibiotic

dayao kae vivekapurn upyog per machli kisano ko salah.
ICAR-DCFR advirory during 2020 in Hindi.

Manisha Gupta, Gunja, Sumanta K Mallik, Neetu Shahi and Debajit Sarma. 2020. Machali palan, iski bikri karate samay janae corona virus kae sambandth mae mahatpurn jankari. ICAR-DCFR advirory during COVID 19 outbreak in 2020 in Hindi.

Book edited

As editor, edited the book “Coldwater Fisheries and Aquaculture” of ICAR-DCFR, published by Narendra Publishing house. New Delhi, India pp 405.

Neetu Shahi and Amit Joshi (*eds*). Himjyoti 2019. ICAR-DCFR annual publication. Hindi magazine. Pp127.

N.N. Pandey., Patiyal R.S., Shahi N., Akhtar M.S., 2012. Souvenir cum abstract book. National seminar on Mountain fisheries: Challenges and opportunities for livelihood security. 5-6 November 2012. Publisher-ICAR DCFR, 178 pp.

Patiyal R.S., Shahi N., Gupta S.K. DCFR annual report 2012-2013.

Patiyal R.S., Shahi N., Gupta S.K. DCFR annual report 2013-2014.

Bulletin

Sarma, D., Akhtar M.S., Pandey N.N., Shahi, N., Mohanty B.P., Mahanta P.C. 2011. Nutrient profile and health benefits of Coldwater Fishes. ICAR-DCFR Bulletin no: 18. 58 pp

Projects (Institutional/ External)

Ongoing

2020-2023: Network programme on mahseer of genus *Tor* and *Neolissochilus* from central and eastern Himalayan region of India. **ICAR, India (P.I)**

2019-2022: Genome editing in common carp, *Cyprinus carpio* using CRISPR/Cas9 system. **ICAR, India (P.I)**



ICAR- DIRECTORATE OF COLDWATER FISHERIES RESEARCH

Bhimtal- 263136, Distt. Nainital, Uttarakhand, India

Phone: 05942-247280, Fax: 05942-247693



2018-2022: Network Programme on Antimicrobial Resistance in Fisheries. **ICAR, India (CO-P.I)**

2016-2022: All India Network Project on Fish Health (AINP-FH). **ICAR, India. (CO-P.I)**

Completed

2019-2021: Development of anti-infective synthetic peptide against *Lactococcus garvieae* and other pathogenic bacteria isolated from rainbow trout, *Oncorhynchus mykiss*, **ICAR Extramural, India. (CO-P.I)**

2015-2019: Development of fish viral peptide based nano system for intracellular delivery of biomolecules. **ICAR, India (CO-P.I)**

2014-2018: Molecular characterization and gene expression profiles of kiss genes in golden mahseer during different gonadal development stages. **ICAR, India (P.I)**

2014-2017: Development of bacterial bioremediation measures for the mitigation of microalgae blooms in freshwater aquaculture ponds. **DBT, India (P.I)**

2011-2017: Potential bacterial pathogens from rainbow trout fish farm of northern India and maintenance of bacterial agents. **ICAR, India (CO- P.I)**

2012-2015: Evaluation of genetic toxicity and ecological damage caused by coalmines on fish fauna of Simsang river, Garohills, Meghalaya and development of microbial bioremediation measures. **DBT, India (CO-PI)**

Important 10 Publications (recent)

Patil P.K., Mishra, S.S., Pradhan, P.K., Manna, S.K., Abraham, T.J., Solanki, H.G., Shahi, N., et al., 2022. Usage pattern of chemicals, biologicals and veterinary medicinal products in Indian aquaculture. Reviews in Aquaculture. DOI: 10.1111/raq.12688

Rawat S., Shahi N., Mallik S.K., Pathak, R., Singh B., Pande V. 2021. Biocontrol of toxin producing cyanobacterium *Microcystis aeruginosa* by algicidal bacterium *Exiguobacterium acetylicum* strain TM2 isolated from mid-

altitudinal Himalayan lake of northern India. International Journal of Current Microbiology and Applied Sciences. 10(11). Doi.org/10.20546/ijcmas.2021.1011.xx.

Neetu Shahi, Sumanta K Mallik and Debajit Sarma. 2022. Muscle growth in targeted knockout common carp (*Cyprinus carpio*) *mstn* gene with low off-target effects. Aquaculture. 547; 737423. doi.org/10.1016/j.aquaculture.2021.737423.

Krishna Kala, **Neetu Shahi**, Shivam Singh, Surabhi Rawat, Rabinder Singh Patiyal, Veena Pande and Sumanta K Mallik. 2021. New host record of *Vibrio anguillarum* associated with haemorrhagic septicaemia in golden mahseer, *Tor putitora* (Hamilton, 1822) from India. Indian Journal of Comparative Microbiology, Immunology and Infectious Diseases. 42(1); 71-83. Doi:10.5958/0974-0147.2021.00008.8.

Shivam Singh, Sumanta K Mallik, Krishna Kala, **Neetu Shahi**, Richa Pathak, Abhay Kumar Giri, Suresh Chandra, Kushagra Pant, Rabindar Singh Patiyal. 2021. Characterization of *Flavobacterium columnare* from farmed infected rainbow trout, *Oncorhynchus mykiss* (Walbaum, 1792) of central Indian Himalayan region of India. Aquaculture. 544(2021) 737118. <https://doi.org/10.1016/j.aquaculture.2021.737118>.

Sumanta K Mallik., Nupur Joshi., **Neetu Shahi**, Krishna Kala., Shivam Singh et al., 2020. Characterization and pathogenicity of *Aeromonas veronii* associated with mortality in cage farmed grass carp, *Ctenopharyngodon idella* (Valenciennes, 1844) from the Central Himalayan region of India. Antonie van Leeuwenhoek. <https://doi.org/10.1007/s10482-020-01478-3>

Bhat RAH, Thakuria D., Pant V., Khangembam KC., Tandel RS., **Shahi N.**, Sarma D., Tripathi G., Krishnani KK and Krishna G. (2020). Antibacterial and antioomycete activities of a novel designed RY 12 WY peptide against fish pathogen. Microbial Pathogenesis. 149. 104591.

Neetu Shahi and Sumanta K MalliK. (2020). Emerging bacterial fish pathogen *Lactococcus garvieae* RTCL104, isolated from rainbow trout (*Oncorhynchus mykiss*): Genomic features and comparative genomics. Microbial

Pathogenesis. 147, 104368.

Neetu Shahi, Sumanta K Mallik, Krishna Kala, Nupur Joshi, Ravinder S Patiyal, Suresh Chandra, Sivam Singh, DebajitSarma (2020). Seasonal emergence of benign epidermal tumor in farm-reared adult grass carp (*Ctenopharyngodonidella*) caused by lymphocystis disease virus at Uttarakhand, India. *Aquaculture*. 526, 735408. doi.org/10.1016/j.aquaculture.2020.735408

Sumanta K Mallik, **Neetu Shahi**, Nupur Joshi, Krishna Kala, Suresh Chandra, DebajitSarma (2019). The emergence of zoonotic *Fusarium oxysporum* infection in captive-reared fingerlings of golden mahseer, *Tor putitora*(Hamilton, 1822) from the central Himalayan region of India. *Transboundary and Emerging Diseases*. DOI: 10.1111/tbed.13367.

Neetu Shahi, Sumanta K Mallik, MonalisaSahoo, Suresh Chandra, Atul Kumar Singh (2018). First report on characterization and pathogenicity study of emerging *Lactococcus garvieae* infection in farmed rainbow trout, *Oncorhynchus mykiss*(Walbaum), from India. *Transboundary and Emerging Diseases*. 65, 1039-1048.

Other information's

Patent:

Application number: 202011057122

Dated 30-12-2020

Title "Composition, protocol and diagnostic kit for detection of bacterial pathogen *Lactococcus garvieae*"

Type India Patent

Product developed for commercialization

Aqua FSD