

PERSONAL INFORMATION

Nishan Katuwal

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CURRENT WORK EXPERIENCES

1 January 2025 – Present

Project Manager

Children's Lung (CLUNG) Project funded by Research Council of Norway
Department of Clinical and Molecular Medicine, Norwegian University of Science and Technology (NTNU), Norway

Responsibilities (25% Position):

- Manage and plan activities and data from the CLUNG research project at NTNU, Norway and remotely at Dhulikhel Hospital Kathmandu University Hospital, Nepal
- Allocate resources effectively, including personnel, budget and resources
- Establish and monitor quality standards to ensure project deliverables
- Write and formulate research grant proposals and manuscripts
- Coordinate with international research team in Nepal and Norway

1 April 2019 – Present

Project Manager, Molecular Biologist and In-charge of Molecular and Genome Sequencing Research Lab

Promoted from Project Coordinator since 28 March 2024

Molecular Biologist since June 2020, In-charge since January 2021

Center for Infectious Disease Research and Surveillance
Research and Development Division, Dhulikhel Hospital, Kathmandu University Hospital, Dhulikhel, Nepal

Responsibilities as Project Manager:

- Manage and plan various research projects and ensure their effective implementation
- Write and formulate research grant proposals and manuscripts
- Conduct all research activities, capacity-building courses, training programs and workshops
- Allocate resources effectively, including personnel, budget, and resources
- Establish and monitor quality standards to ensure project deliverables
- Manage changes to project scope and identify critical path
- Coordinate with national and international multidisciplinary collaborators

Responsibilities as In-charge:

- Perform laboratory activities (library preparation, pre-PCR, post-PCR analysis) of sequencing at Dhulikhel Hospital, Kathmandu University Hospital
- Perform extensive data analysis of genomic sequences
- Supervise all sequencing related activities at Dhulikhel Hospital, Kathmandu University Hospital

Responsibilities as Molecular Biologist:

- Perform molecular activities (singleplex and multiplex realtime PCR, post-PCR analysis) at Research and Development Division, Dhulikhel Hospital
- Supervise all molecular related activities at Research and Development Division, Dhulikhel Hospital

RESEARCH PROJECTS

July 2025 - Present

Co-Investigator

Working as Co-Investigator for the study titled "Seroprevalence of Dengue and Scrub Typhus in Nepal" funded by Bill and Melinda Gates Foundation.

Activities and Responsibilities:

- Designing protocol and supervise the validation of the end-point ELISA for dengue and scrub typhus
- Supervising and overseeing serological investigation of dengue and scrub typhus in banked serum samples
- Providing capacity building and training to research staffs

July 2024 - Present

Co-Investigator/Project Manager

Working as Co-Investigator for the study titled “Integrated Surveillance of Dengue in Nepal” funded by Bill and Melinda Gates Foundation.

Activities and Responsibilities:

- Supervising and overseeing serological investigation of dengue suspected cases
- Supervising and performing extraction of RNA from serum samples.
- Supervising and performing multiplex qPCR to identify DENV serotypes and other arboviruses
- Supervising and performing whole genome sequencing of qPCR positive serum samples
- Genomic Analysis: Phylogenetics, Phylodynamics
- Clinical correlation of genotype/phenotype with patient outcomes

March 2024 - Present

Co-Investigator

Working as Co-Investigator for the study titled “Evaluation of parasitic cause of eosinophilia in children in Paediatrics department of Dhulikhel Hospital and its affiliated health facilities”

Activities and Responsibilities:

- Supervising and performing extraction of DNA from stool
- Supervising and performing NGS to detect any parasitic DNA in stool samples: assessed with shotgun metagenomics and 16S/18S rRNA amplification sequencing
- Supervising and performing serological investigation to detect IgM/IgG against the parasites.

January 2024 - Present

Co-Principal Investigator

Working as Co-Principal Investigator for the study titled “Whole Genome Sequencing of Bacterial Isolates using Illumina iSeq100”

Activities and Responsibilities:

- Supervising and performing extraction of DNA from bacterial isolates
- Supervising and performing qPCR to confirm the bacterial isolates
- Supervising and performing whole genome sequencing of qPCR positive isolates samples
- Genomic and Molecular Data Interpretation and Analysis
- Training and Capacity Building of Researchers in Bacterial WGS in Illumina iSeq100

January 2024 –
March 2025

Co-Principal Investigator

Working as Principal Investigator for the study titled “Molecular and Genomic Investigation of DENV Serotypes in the dengue outbreak of 2022 and 2023 in Nepal”

Activities and Responsibilities:

- Supervising and performing extraction of RNA from serum samples.
- Supervising and performing multiplex qPCR to identify DENV serotypes
- Supervising and performing whole genome sequencing of qPCR positive serum samples
- Genomic and Molecular Data Interpretation and Analysis

October 2023 - Present

Co-Investigator and Molecular Biologist

Working as Co-Investigator, Molecular Biologist and Project Manager for the study titled “Children’s Lung Study in Dhulikhel, Nepal (C-LUNG)” funded by Research Council of Norway

Activities and Responsibilities:

- Supervising and performing extraction of RNA and qPCR of nasal samples (SARSCOV2, RSV, hMPV and Inf A/B) from children suffering from lower respiratory tract infection (LRTI).
- Supervising and performing blood sample collection, processing and storage.
- Immunological cells profiling of subjects with LRTI using CyTOF and Flow Cytometry
- Immunological investigation for chemokines and cytokines
- Supervising and coordinating overall project activities

February 2023 – June 2023	Principal Investigator Working as Principal Investigator for the study titled “Molecular Investigation of DENV Serotypes in the dengue outbreak of 2022 in Nepal” funded by Nepal Health Research Council (NHRC) under Provincial Health Research Grants 2079/2080. Activities and Responsibilities: - Supervising and performing extraction of RNA from serum samples. - Supervising and performing multiplex qPCR to identify DENV serotypes - Data Interpretation and Analysis
December 2022-Present	Co-Investigator/Nepal-Site Lab Lead Working as Co-Investigator and Site Lab lead in the research study titled “Investigation of Global HPV Burden” funded by Bill and Melinda Gates Foundation, in collaboration with International Vaccine Institute (IVI), London School of Hygiene and Tropical Medicine (LSHTM), Karolinska Institutet (KI), and US Centers for Disease Control and Prevention (CDC) Activities and Responsibilities: - Lead selection of testing platform for HPV, developing and implementing laboratory SOPs, developing and coordinating QC programs - Supervising molecular investigation of HPV samples at Nepal Site (DHKUH) - Training of laboratory personnel for molecular detection of HPV using allplex HPV assay
May 2022-December 2022	Co-Investigator Working as Co-Investigator in research study titled “Advancing Food Security Via Harvested Rainwater in Nepal: A Research and Capacity Building Program” funded by University of Maryland, USA Activities and Responsibilities: - Analyse microbiome in irrigation water through mNGS - Facilitate capacity building program directed to farmers in Kavre District
June 2022 – December 2024	Co-Investigator/Researcher Working as Co-Investigator in research study titled “Study on Seroprevalence of Hepatitis E in Nepal”, funded by International Vaccine Institute (IVI) and Bill and Melinda Gates Foundation Activities and Responsibilities: - Analyse serum samples for presence of IgG against HEV and investigate the seroprevalence of HEV in Nepal - Identify the risk factors associated with HEV in Nepal
March 2022-November 2022	Co-Investigator/Researcher Working as Co-Investigator in dry lab-based research study titled “Promoting Sustainable Development in Bioinformatics to Support Public Health in Nepal”, funded by Public Health Alliance for Genomic Epidemiology, South Africa Activities and Responsibilities: - Analyse the genomic and antibiotic susceptibility test results - Create hAMRonized reports of AMR genes using CLI - Developing correlation model between phenotypic and genotypic data
December 2021-July 2022	Co-Investigator Working as Co-Investigator in research study titled “Breakthrough infection of COVID-19 in vaccinated healthcare workers at Dhulikhel Hospital and its associated factors” funded by Nepal Health Research Council (NHRC), under Provincial Research Grant Activities and Responsibilities: - Oversee blood sample collection, serum separation, storage and accountability - Perform end point ELISA on the collected samples for titers of neutralising antibodies - Oversee the data collection and management
September 2021-Present	Co-Investigator Working as Co-Investigator in the Phase III vaccine study trial titled “A parallel-group, Phase III, multi-stage, modified double-blind, multi-armed study to assess the efficacy, safety, and immunogenicity of two SARS-CoV-2 Adjuvanted Recombinant Protein Vaccine (monovalent

and bivalent) for prevention against COVID-19 in adults 18 years of age and older” in collaboration with International Vaccine Institute

Activities and Responsibilities:

- Oversee blood sample/nasal/throat sample separation, storage and accountability
- Perform RT-PCR for CLI (COVID like illness) among the participants
- Oversight of all trial functions including adverse event tracking
- Data Quality Management including compliance with ICH GCP

August 2021-December 2021

Researcher/Quality Assurance Manager

Working as Data Quality Manager and Researcher in the research project titled “A Multisectoral Approach to Investigate a Burden of Antimicrobial Resistance in a sub-urban area of Nepal - A feasibility study” funded by World Health Organisation (WHO) under TDR Small Grant

Activities and Responsibilities:

- Supervise laboratory processing of cecum and stool samples for microbiological and serological analysis.
- Review the standards of data collection, laboratory methods and data every three months.
- Coordinate and host the data quality assurance meeting every three months with representation of field enumerators, laboratory personnel, the steering committee representative and other co-investigators.

November 2020-Present

Researcher

Working as researcher in the research project titled “Biomarkers, Sequencing and Phenotyping of Seasonal Hyperacute Pan-Uveitis (SHAPU)” in collaboration with B.P. Koirala Lions Centre for Ophthalmic Studies (BPKLCOS), funded under 2019 Global Ophthalmology Award Program (GOAP). We have received second round of funding from University Grant Commission (UGC), Nepal.

Activities and Responsibilities:

- RNA/DNA Extraction from Ocular Fluid
- Perform Metagenomic Next Generation Sequencing (NGS) on iSeq100
- Bioinformatics and Metagenomic Data Analysis

September 2020-July 2023

Researcher

Working as researcher in the research project titled “Deciphering Whole Genomic Sequence of SARS-CoV-2 using Next Generation Sequencing Technology in COVID-19 patients of Nepal” in collaboration with Nepal Health Research Council (NHRC) and Ministry of Health and Population, Nepal (MoHP)

Activities and Responsibilities:

- To perform whole genome sequencing on SARS-CoV-2 strains
- To analyse the whole genome combined with epidemiological and clinical data.
- To evaluate and understand the COVID-19 outbreak in Nepal

June 2020-August 2021

Molecular Biologist/Co-Investigator

Worked as one of the Co-Investigators in research project titled “COVID 19: Strengthening Provincial Level COVID Response in Nepal” funded by Bill and Melinda Gates Foundation

Activities and Responsibilities:

- To conduct training activities focused on molecular detection of COVID-19
- To facilitate construction of COVID-19 Diagnostic Lab at Province 3 and 6 in Nepal
- To facilitate other laboratory strengthening activities at Province 3 and 6 in Nepal

December 2019- December 2024

Researcher

Working on research project titled “Application of Metagenomic NextGen Sequencing Technology to Identify Etiology of Fatal Acute Encephalitis Syndrome (AES) in Nepal” under Grand Challenge Explorations from Bill and Melinda Gates Foundation. We have received second round of funding to continue this work from Bill and Melinda Gates Foundation.

Activities and Responsibilities:

- RNA/DNA Extraction from Cerebrospinal Fluid
- Perform Next Generation Sequencing (NGS) on iSeq100
- Bioinformatics and Metagenomic Data Analysis
- Capacity building and training

December 2019- October 2021

Researcher Project Coordinator

Working on research project titled "Serological Epidemiology and Environment Surveillance (Nepal)" in collaboration with Stanford University and Sabin Vaccine Institute, funded by Bill and Melinda Gates Foundation

Activities and Responsibilities:

- Validating a low-cost serologic tool to distinguish acute typhoid infections from past infections and other illnesses.
- Serological Study of Typhoid Antigens (ELISA)

1 April 2019-27 March 2024

Research Project Coordinator

Working on research project titled "Analysis of Serum YncE responses in patients with S. Typhi/Paratyphi carriage following elective cholecystectomy in Kathmandu and Dhulikhel, Nepal" in collaboration with Harvard University, funded by National Institute of Health (NIH).

Activities and Responsibilities:

- Microbial Detection of S. Typhi/Paratyphi
- Molecular Detection of S. Typhi/Paratyphi by Real Time PCR
- Serological Study of Typhoid Antigens

PAST EXPERIENCES

1 April 2019 – 27 March 2024

Research Project Co-ordinator

Promoted to Project Manager after 28 March 2024

Center for Infectious Disease Research and Surveillance

Research and Development Division, Dhulikhel Hospital, Kathmandu University Hospital, Dhulikhel, Nepal

Responsibilities:

- Coordinate various research projects as per the instruction from PI and Co-PI
- Conduct all research activities, training programs and workshops in coordination with investigators.
- Manage the overall project
- Monitor, evaluate and ensure the correct implementation of the project
- Write and formulate research grant proposal and research articles

16 August 2017- 31 March 2019

Program Co-ordinator/Lab Co-ordinator and Lecturer

Kantipur Valley College, Lalitpur (Nepal)

Responsibilities:

- Lecturing undergraduate students on "Genetic Engineering", "Molecular Biology", "Chemistry-I", "Marketing and Management", +2 students on "Organic Chemistry" and conducting laboratory courses
- planning/organising (class schedule, exam schedule, guest lectures, workshops)
- supervising and guiding (lectures, laboratory experiments, exam activities);
- performing (designing lab layout, recruiting lecturers, creating and designing academic year, lecturing undergraduate students);
- maintaining PR relation (work closely with university personnel, student representatives, regular meetings with teachers and collaborators).

16 July 2017- 31 March 2019

Lecturer

College of Applied Food and Dairy Technology, Kathmandu, Nepal

Responsibilities:

- Lecturing undergraduate students on "Food Process Engineering I", "Instrumental Methods of Food Analysis" and "Modern Biotechnology and Genetic Engineering"
- Conducting laboratory courses for respective subjects

15 August 2016- 23 June 2017

Research Student

Dr. Kurt Ingar Draget, Professor/Researcher, Department of Biotechnology and Food Science, Norwegian University of Science and Technology (NTNU), Norway.

Research Title: "Effects of nanoparticle drug delivery formulations on the rheological properties of mucus" under COMPACT Project, collaboration of IMI (Innovative Medicine Initiative), EU-EFPIA (European Federation of Pharmaceutical Industries and Association).

Responsibilities:

- Analysing and preparation of pig mucus samples.
- Analysis of nanoparticles (polymer and protein based)
- Rheological and Microscopic Analysis of mucus samples
- Statistical Analysis of Data

Lecturer

15 November 2014–31 July 2015

College of Applied Food and Dairy Technology, Kathmandu (Nepal)

Responsibilities:

- Lecturing undergraduate students on "Bio-chemical Engineering" as well as "Modern Biotechnology and Genetic Engineering"
- Conducting laboratory courses for respective subjects

15 Sep 2014–15 Dec 2014

Research Assistant

Dr. Dhurva Prasad Gauchan, Department of Biotechnology, Kathmandu University, Dhulikhel (Nepal)

Research Title: "Genetic Diversity of Endangered Species *Taxus baccata* subsp. *wallichiana* and Implications for its Conservation"**Responsibilities:**

- Sample Collection from different districts in Nepal
- DNA extraction of *Taxus baccata*
- PCR and RAPD analysis
- Phylogenetic Analysis

EDUCATION

1 Jan 2025 - Present

PhD in Immunology and Molecular Medicine

Norwegian University of Science and Technology, Trondheim (Norway)
 PhD research titled "*Blood immune signatures of Nepali and Norwegian children with lower respiratory tract infections*", which is funded by Helse Midt-Norge RHF (Regional Cooperation Agency for Education, Research and Innovation), Norway and is part of collaborative research project, between Dhulikhel Hospital and NTNU, titled "Children's Lung Study in Nepal" funded by Research Council of Norway.

11 Aug 2015– 23 June 2017

Master of Science in Biotechnology

Norwegian University of Science and Technology, Trondheim (Norway)
 Master's Thesis titled "Effects of nanoparticle drug delivery formulations on the rheological properties of mucus" *under COMPACT Project, collaboration of IMI (Innovative Medicine Initiative), EU-EFPIA (European Federation of Pharmaceutical Industries and Association).*

Courses: Molecular Cell Biology, Molecular Genetics, Bioinformatics, System Biology, Statistical Analysis and Research Planning, Biopolymer Chemistry, Patenting and Commercialisation, Biotechnology and Ethics, Special Syllabus (Pharmacology, Drug Delivery and Nanomedicine)

14 Aug 2010–8 Nov 2014

Bachelor of Technology in Biotechnology

Kathmandu University, Dhulikhel (Nepal)

Bachelor's Thesis titled: "Genetic Diversity of Endangered Species *Taxus baccata* subsp. *wallichiana* and Implications for its Conservation"

Courses: Cancer Biology, Biochemistry, Molecular Biology, Genetics, Genomics and Proteomics, Bioinformatics, Enzyme-technology, Microbiology, Recombinant DNA Technology

Jul 2008- Aug 2010

+2 in Science

Amiko Awasiya H. S. School, Biratnagar (Nepal)

June 2008

School Leaving Certificate (SLC)

Sagarmatha Secondary Boarding School, Biratnagar (Nepal)

TRAINING, COURSES AND INTERNSHIP

20-22 August 2025	High end flow cytometry and data analysis Faculty of Health and Medical Sciences, University of Copenhagen, Denmark 2.3 ECTS, Course Number: 3271-25-00-00
11-12 August 2025	Health AI in R Workshop HUNT Center for Molecular and Clinical Epidemiology, Norwegian University of Science and Technology, Norway and Digital Life Norway Research School
28 - 30 April 2025	Laboratory Leadership Workshop European Molecular Biology Organization-Solutions, Germany and Chan Zuckerberg Initiative, United States
1 Dec 2024 – 10 Feb 2025	Train the Trainer: Design Genomics and Bioinformatics Training Wellcome Connecting Science, UK
30 October – 18 December 2024	Scientific Manuscript Development Workshop Online Course (E-Learning) Chan Zuckerberg Initiative, United States and AtKisson Training Group, United States
17 – 18 September 2024	Training on Collaborative Research Ethics Training Arnhold Institute for Global Health at Mount Sinai, Nepal Health Research Council and Dhulikhel Hospital, Kathmandu University Hospital
12 – 13 September 2024	Training on Introduction to Research Administration Arnhold Institute for Global Health at Mount Sinai and Dhulikhel Hospital, Kathmandu University Hospital
3 July - 9 July 2024	Hands on Training on Arboviral Genomic Surveillance in a Climate Evolving World Asia Pathogen Genomics Initiative, Duke-NUS Medical School and Agency for Science, Technology and Research, Singapore Long Read and Short Read Sequencing of Arboviruses, specially Dengue and Zika through wet lab and dry lab techniques.
13 May -15 May 2024	Hands on Training on Bacteriophage Screening, Isolation and Propagation Center for Infectious Disease Research and Surveillance, Dhulikhel Hospital Kathmandu University Hospital Bacteriophage Screening, Isolation and Propagation, held at Research and Development Division, Dhulikhel Hospital Kathmandu University Hospital. The training emphasized on bacteriophage screening, propagation (by Double Layer Agar Method), plaque selection, purification, spot testing and storage methods.
10 Mar -12 Mar 2024	Hands-on Training on Peripheral Blood Mononuclear Cells (PBMC) Isolation Training by Density Gradient Centrifugation Method Center for Infectious Disease Research and Surveillance, Dhulikhel Hospital Kathmandu University Hospital Training focused on blood collection and centrifugation, mononuclear cells isolation, white blood cell count, storage in ultra-low temperature and cell revive procedures.
21 Jun 2023 – 17 Dec 2024	Genomic Epidemiology Training conducted by Rapid Response Team, Chan Zuckerberg SF, USA Online Course (E-Learning) Introduction to applied genomic epidemiology for outbreak response; Universal

	sampling guidelines and Selection for applied genomic epidemiology; Sequence data quality control; Consensus genome assembly; Metadata collection and integration for applied genomic epidemiology; Sequence alignment; Phylogenetic Analysis; CZI Pan-viral Pipeline.
6 Mar 2023 - 26 Mar 2023	Pathogen Genomics: A New Era in Global Health Surveillance and Strategy conducted by Wellcome Connecting Science and COG-Train Online Course (E-Learning) Tools and resources to strengthen pathogen surveillance, genomic approach to tackle infectious diseases, communicating genomic data to inform public health actions, scientific evidence to prepare for future global health threats
2 Feb 2023	Practical Workshop on Pathogen Detection Sequencing Data using Galaxy conducted by Galaxy Project Online Course (E-Learning) Galaxy Introduction and Pathogen Detection (Theory and Practical)
4 April 2022 - 8 April 2022	Training on RT-qPCR and Gene Expression qPCR conducted by Gene Expression University from Bio-Rad Laboratories Inc. Online Course (E-Learning) RT-qPCR and Gene Expression, Sample Preparation, Experimental Design and Assay Optimisation
28 March 2022 - 31 March 2022	Hands-on Technical Workshop in SARS-CoV-2 Genomic Analysis, conducted by University of Cambridge and UK Health Security Agency Online Course (E-Learning) Unix Command Line, Shell Scripting, NGS Data Analysis, SARS-CoV-2 Genome Assembly and Lineage Assignment
16 March 2022 - 22 March 2022	Hands-on Technical Workshop in Genomics, Proteomics, In-silico Molecular Biology and Genetic Engineering, conducted by BDG Life Sciences Online Course (E-Learning) Structural Annotation, Functional Annotation, Homology Modeling, Protein Structure Prediction, SNP Analysis, Primer Design, Restriction Mapping, Protein Mutagenesis
14-17 September 2021	Workshops for Writing Articles for Publication in International Peer-Reviewed Journals Dhulikhel Hospital in coordination with The Sheffield University and British Academy.
28 June 2021- 12 September 2021	Project Management in Global Health Department of Global Health and Epidemiology, University of Washington, USA Online Course (E-Learning) Understanding fundamentals of project management, including how to design and conduct assessment, create implementation plan and manage project resources; develop project management skills necessary in global public health environment
3 June 2021	ICH E6 (R2) Good Clinical Practice International Vaccine Institute Understanding good clinical practice, international ethical and scientific quality standard for designing, conducting, recording and reporting trials that involve the participation of human subjects
11 January 2021 - 28 March 2021	Introduction to Epidemiology in Global Health Department of Global Health and Epidemiology, University of Washington, USA Online Course (E-Learning) Understanding of how the epidemiological methods are used to understand the

6 July to 13 September 2020	distribution of disease within populations and what factors affect the risk of disease Economic Evaluation of Global Health Department of Global Health and Epidemiology, University of Washington, USA Online Course (E-Learning) Understanding concepts and decisions of economic evaluation, in healthcare, in low- and middle-income countries
10 February-28 February 2020	Rapid Response Training on Methodology and Practice of Metagenomic Next Generation Sequencing Techniques: Bioinformatics Applications for metagenomic data analysis using IDSeq Global Portal Chan Zuckerberg Biohub, San Francisco, CA, USA
22 September 2019	3rd International Workshop on Hospital Infection Prevention and Control Dhulikhel Hospital, Kathmandu University Hospital in collaboration with Seoul National University Hospital, Seoul National University College of Medicine and JW Lee Center for Global Medicine, Korea. Course Accredited by Nepal Medical Council. Held at Dhulikhel Hospital, Kathmandu University Hospital
24 February - 7 March 2019	Training/Workshop on “Phytochemistry: Phytochemical Extraction and Analysis of Medicinal Plants” From Training Expert: Prof. Dr. Shoji Yahara, Professor, Sanyo-Onoda City University, Yamaguchi, Japan. Held at Kantipur Valley College, Lalitpur
18 September 2018	Training/Workshop on “Potential of Paper Micro fluidics in Diagnosis and Detection” Kathmandu Institute of Applied Sciences supported by Kantipur Valley College, USAID and Partnership for Enhanced Engagement in Research (PEER)
6 November 2017	Training on Flow Cytometry Shikhar Biotech Pvt Ltd, Khumaltar, Nepal
15-16 October 2017	Training on Statistical Software: STATA Udyami Nepal, Biotechnology Society of Nepal and Kantipur Valley College
3 Jan 2015 – 5 Jan 2015	Training on Bioinformatics for Life Sciences ArrayGen Technologies, India and Biotechnology Society of Nepal, Kathmandu (Nepal) - Genomic Analysis - Bioinformatics Database - Protein Analysis - Phylogenetic Analysis
14 Aug 2013 - 27 Aug 2013	Training and Internship Everest Biotech Pvt. Ltd, Lalitpur (Nepal), now Shikhar Biotech Pvt. Ltd, Khumaltar Training in Production of Polyclonal Antibodies - Antibody Production and Purification - Quality Assessment - Bioinformatics for Data Assessment

PUBLICATIONS AND ACHIEVEMENTS

Research Articles:

- **Katuwal N**, Naga SR, Shrestha A, Shahi SB, Tamrakar D, Shrestha R. Leveraging Illumina iSeq100 for Whole Genome Sequencing of Salmonella Typhi: a practical approach for resource-limited setting. Scientific Reports. 2025. 15, 33034. <https://doi.org/10.1038/s41598-025-05863-8> **[First Author]**
- Verwey, C., Dongol, S., Shahi, R., Islam, MS., **Katuwal, N.**, Haug, M., Flo, TH., Shrestha, R., Risnes, R. Pulmonary Function Testing using Tidal Breath Flow-Volume Loops in Healthy Children 1-24 months of age in semi-rural Nepal: Feasibility Study. Authorea. [Preprint] 13 August 2025. <https://doi.org/10.22541/au.175510997.77254111/v1> **[Preprint]** **[Submitted to Pediatric Pulmonology, under review]**
- Telele, N. F., **Katuwal, N.**, Kabir, F., Rahman, S., Shahi, S. B., Yadav, R. R., Aziz, F., Hossain, M. A., Hill, A., Permatasari, I., Lee,

- Y., Cho, H., Lee, J., You, Y.A., Ahn, H.S., Park, S., Tamrakar, D., Pasha, A., Alam, A., Ejaz, M., Nisar, M.I.,... Unger, E. R. Comparison of self-collected vaginal swabs and first-void urine for detection of human papillomavirus in sexually active girls and women in three South Asian countries (Version 2). medRxiv. [Preprint] 1 August 2025. <https://doi.org/10.1101/2025.08.01.25332560> [Second Author] [Preprint] [Submitted to PLOS One, under review]
- Tamrakar D, Naga S, Jung E, Shrestha B, Bista Roka P, Pokharel RS, Shah SB, Bajracharya AT, Mahadup S, **Katuwal N**, Doyle K, Seidman J, Carter A, Luby S, Bogoch I, Aiemyjoy K, Garrett D, Andrews J, Shrestha R. Impact of the COVID-19 pandemic and typhoid conjugate vaccine introduction on typhoid fever in Nepal. medRxiv [Preprint]. 2025 Jun 18. <https://doi.org/10.1101/2025.06.17.25329748> [Preprint]
- Seidman JC, Aiemyjoy K, Adnan M, Dehraj IF, Iqbal J, Iqbal K, Irfan S, Islam N, Kabir MS, **Katuwal N**, Maria N, Memon MA, Munira SJ, Naga SR, Pradhan S, Sarkar A, Shrestha R, ... Charles RC. Evaluating the accuracy of Salmonella Typhi Hemolysin E and lipopolysaccharide IgA to discriminate enteric fever from other febrile illnesses in South Asia. medRxiv [Preprint]. 2025 Jun 22. <https://doi.org/10.1101/2025.06.20.25329792> [Preprint] [Submitted to Emerging Infectious Diseases, under review]
- Bhatt, R.D., Karmacharya, B.M., Shrestha, A. Timalseña D, Madhup S, Shahi R, **Katuwal N**, Shrestha R, Fitzpatrick AL, Risal P. Prevalence of MTHFR C677T polymorphism and its association with serum homocysteine and blood pressure among different ethnic groups: insights from a cohort study of Nepal. BMC Cardiovascular Disorders. 2025, 25, 235. doi: <https://doi.org/10.1186/s12872-025-04690-z>
- Chi M and **Katuwal N**, Shrestha, A. et al. Whole genome sequencing and phylogenetic analysis of dengue virus in Central Nepal from 2022 to 2023. BMC Glob. Public Health. 2025; 3 (18). <https://doi.org/10.1186/s44263-025-00135-z> [Co-First Author, Equal Contribution]
- Poudel L, Adhikari B,.....**Katuwal N**, Karmacharya BM, Shrestha A. Assessment of Home Isolation Measures and Factors Associated with Adherence Among Patients During the Pandemic in Nepal: A Cross-Sectional Study. Global Journal of Medicine and Public Health. Jan 2025. Vol 13 (6). ISSN# 2277-9604
- Rhee C, Dighe A, **Katuwal N**, Cho H, Mradi R, Tamrakar D, Lim JK, Poudyal N, Park IY, Kim DR, Amatya R, Shrestha R, Azman AS, Lynch J. Geospatial distribution of Hepatitis E seroprevalence in Nepal, 2021. PLoS Negl Trop Dis. 2024 Dec 23;18(12):e0012746. <https://doi.org/10.1371/journal.pntd.0012746>. PMID: 39715282; PMCID: PMC11706507.
- Bhattarai, Sankalpa and Silwal, Ram Chandra and Haider, Najmul and Papakonstantinou, Danai and Lamichhane Dhimal, Mandira and **Katuwal, Nishan** and Dhakal, Anjana and Dahal, Gokarna and Tuladhar, Reshma and Banjara, Megha Raj and Dixit, Sameer Mani and Tamrakar, Dipesh and Dhimal, Meghnath and Karna, Ajit Kumar and Gharty Chhetri, Ganga and Shrestha, Rajeev and Price, Helen and Shepherd, Thomas and Paudyal, Priyamvada, Findings from the Interdisciplinary Consultative Workshop on the Prevention, Early Detection, and Control of Dengue in Nepal (August 31, 2024). Available at SSRN: <https://ssrn.com/abstract=4955351>; <http://dx.doi.org/10.2139/ssrn.4955351> [Preprint]
- Kharel RS, Shrestha R, Karki P, Gurung H, KC AK, **Katuwal N**....Upadhyaya MP. Advanced diagnostic approaches for SHAPU: Metagenomic sequencing and interleukin analysis. AJO International. 2024. 1: 100056. <https://doi.org/10.1016/j.ajoint.2024.100056>
- Shrestha R and **Katuwal N**....Gupta BP, Jha R. Investigation of acute encephalitis syndrome with implementation of metagenomic next generation sequencing in Nepal. BMC Infectious Diseases. 2024. 24:734. <https://doi.org/10.1186/s12879-024-09628-y> [Co-First Author, Equal Contribution]
- **Katuwal N**, Thapa M.....Aiemyjoy K. Hepatitis E in Kathmandu Valley: Insights from a Representative Longitudinal Serosurvey. PLoS Negl Trop Dis 18(8): e0012375. <https://doi.org/10.1371/journal.pntd.0012375> [First Author]
- **Katuwal N**, Shrestha A,.....Shrestha R. Molecular Investigation of DENV Serotypes in the dengue outbreak of 2022 in Nepal. Kathmandu Univ Med J. 2024;85(1):99-106. PMID: 39324467 [First Author]
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- Jawal BJ, Telele N,...**Katuwal N**...Lynch J, Watson-Jones D. Harmonising Laboratory Processes for Global Human Papillomavirus Typing and Burden Estimation. *IPVS 2025, Bangkok, Thailand*
- Tamrakar D, Karki R, Gautam S, Shrestha N, Shahi SB, **Katuwal N**,...Shrestha R, Shrestha A. Incidence Of Persistent Of High-And Low-Risk Human Papillomavirus Among Young Women in Nepal: Preliminary Findings from the Globe-HPV Longitudinal Study. *IPVS 2025, Bangkok, Thailand*
- **Katuwal N**, Nilsen E, Hundvin KH, Gosain S, Dongol S, Shrestha R, Risnes KR, Flo TH. Viral etiology, immune dysregulations, clinical and environmental factors in development of chronic lung disease in children with LRTI in Nepal. *Nordic Flow Cytometry Meeting 2025, Copenhagen, Denmark*. [Abstract No. 37]
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- Hill A, Rahman M, Hotwani A, **Katuwal N**....Lynch J. The Global Burden Estimation of Human Papillomavirus (GloBE-HPV) Project: Comparison of Detection of High-Risk HPV From First-Void Urine Vs. Self-Collected Cervicovaginal Swabs in South Asia. *36th International Papillomavirus Conference 2024, Edinburg, UK*. [Abstract No. 2426]
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- Chi M, **Katuwal N**, Shrestha A, Tamrakar D, Shrestha R. Multiple Genotypes And Clades Of Dengue Virus Identified During 2022 And 2023 In Central Nepal. *ASTMH 2024 Annual Meeting, New Orleans, USA*. [Abstract No. 6278]
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- **Katuwal N**, Adhikari N,...Shrestha R. Evaluation of Onsite Training Focused on Molecular Methods of COVID-19 Testing, in Kamali Province of Nepal. Seventh National Summit of Health and Population Scientists in Nepal 2021, Kathmandu, Nepal.

Presentations:

- Oral presentation titled "Viral Etiology, Immune Dysregulations, Clinical and Environmental Factors in Development of Chronic Lung Disease in Children with LRTI in Nepal" at Nordic Flow Cytometry Meeting, Copenhagen, Denmark, 2025.
- Oral presentation titled "Understanding the association between viral etiology, immune dysregulations, clinical and environmental factors in development of chronic lung disease in children in Nepal: Children's Lung Study in Dhulikhel, Nepal" at 60th Norwegian Bioscience Society Meeting, Roros, Norway, 2025.
- Poster presentation titled "Leveraging Illumina iSeq100 for Whole Genome Sequencing of Salmonella Typhi: a practical approach for resource-limited setting" at Gates Grand Challenges Grantee Meeting, New Orleans, United States, 2024.
- Poster presentation titled "Multiple Genotypes and Clades of Dengue Virus Identified During 2022 and 2023 in Central Nepal" at ASTMH, New Orleans, United States, 2024.
- Poster presentation titled "Unbiased metagenomic sequencing of acute encephalitis and meningoencephalitis for identification of infectious etiologies in Nepal" at ASTMH, New Orleans, United States of America, 2024.
- Oral presentation titled "Seroprevalence, Geospatial Distribution and Risk factors associated with Hepatitis E infection in Nepal" at National Summit of Health and Population Scientists in Nepal, Kathmandu, Nepal, 2024.
- Oral presentation titled "Application of whole genome sequencing to investigate circulating SARS-CoV-2 variants in Nepal" at National Biotechnology Conference, Dhulikhel, Nepal, 2023.
- Poster Presentation titled "Molecular Investigation of DENV Serotypes in the dengue outbreak of 2022 in Nepal" at ITM Colloquium, Kathmandu, Nepal, 2023.
- Poster Presentation titled "Investigation of Acute Encephalitis Syndrome with Implementation of Metagenomic Next Generation Sequencing in Nepal" at Gates Grand Challenges Meeting, Dakar, Senegal, 2023.
- Poster Presentation titled "The Seroprevalence of Hepatitis E Virus in Urban and Peri-urban Nepal" at JITMM, Bangkok, Thailand, 2022.
- Poster Presentation titled "Analysis of serum YncE responses in patients with S. Typhi/Paratyphi carriage following elective cholecystectomy in Kathmandu and Dhulikhel, Nepal" at ASCODD, Kolkata, India, 2022.
- Oral Presentation titled "Metagenomic Next Generation Sequencing and its utilisation in context of public health in Nepal" at International Conference on Bioscience and Biotechnology, Chitwan, Nepal, 2022.
- Oral presentation titled "Evaluation of Onsite Training Focused on Molecular Methods of COVID-19 Testing, in Kamali Province of Nepal" at National Summit of Health and Population Scientists in Nepal, Kathmandu, Nepal, 2021.
- Poster Presentation titled "Study of changes in rheological properties of mucus in presence of various DDS" at COMPACT Consortium- Annual Full Consortium, Saarbrücken, Germany, March 2017.

Achievements, Awards and Scholarships:

- Recipient of PhD Research funding from Helse Midt-Norge RHF (Regional Cooperation Agency for Education, Research and Innovation), Norway
- Recipient of Nepal Health Research Council (NHRC) Provincial Health Research Grant
- Recipient of Second-Best Poster Presentation at ASCODD 2022, Kolkata.
- Awardee of Best Paper Award at Seventh National Summit of Health and Population Scientist in Nepal 2021, awarded by Ministry of Health and Population (MoHP) and Nepal Health Research Council (NHRC).
- Recipient of Norwegian Quota Scholarship 2015-2017, under support from Norwegian State Educational Loan Fund (Lånekassen)
- Recipient of Mahatma Gandhi Scholarship 2008-2009 from Government of India

- Recipient of 50% Tuition Fee Waiver Scholarship for +2 (Science) from 2008-2010

Supervision Experiences:

- till date supervised 5 undergraduate students (B. Tech in Biotechnology and B. Tech in Food Technology, Purbanchal University)

Organisational Positions:

- Member, Norwegian Research School in Global Health for Sustainable Futures (September 2025-Present)
- Co-Lead, Infectious Disease Community, Global Alliance for Genomics and Health (July 2025-Present)
- Member, Digital Life Norway Research School, Norway (January 2025-Present)
- Member, American Society of Tropical Medicine and Hygiene, United States (July 2024-Present)
- Member (DHKUH), International Pathogen Surveillance Network, WHO (July 2024-Present)
- Guest Lecturer for Infectious Disease and Public Health Chapter of undergraduate course Water, Food and Global Public Health (MIEH333) at University of Maryland, USA, for Fall 2022 and Fall 2023 semester
- Consulting Member, National Pathogen Genome Consortium, Ministry of Health and Population, Nepal Government (March 2021-Present)
- Former Trainer for course focused on Molecular Detection of COVID-19, approved by Ministry of Social Development, Kamali Province, Nepal (February 2021-December 2024)
- Former Member, Subject Committee (Biotechnology, Biochemistry and Biomedical Engineering), Faculty of Science and Technology, Purbanchal University (August 2017 - March 2019)
- Former Social Events Co-ordinator at TEDxTrondheim, Norway (October 2016-June 2017)
- Former Executive Member, Corporate Relations, Board of European Students of Technology Trondheim (Aug 2016-June 2017)
- Former Vice President, Nepalese Society in Trondheim (NeST), Norway (September 2015-September 2016)
- Former General Secretary, Amnesty International Kathmandu University Youth Network (2012-2013)
- Former Executive Member of Biotechnology Society of Nepal as well as Red Cross Society of Nepal (2010-2014)

PERSONAL AND JOB-RELATED SKILLS

Mother tongue(s)	Nepali
Other language(s)	English: Fluent in Listening, Reading, Speaking and Writing.
English Language Test	- TOEFL=114/120 (R:29; L:28, S:30, W:27) (Expiring December 2024)
Communication skills	- Excellent Teaching and Communication Skills obtained as a part of my work as Lecturer - Excellent Presentation Skills obtained from my work as Researcher and Lecturer
Job-related skills	- Certified for ICH E6 (R2) Good Clinical Practice, Human Subjects Research Training and Responsible Conduct of Biomedical Research, Collaborative Institutional Training Initiative (CITI) - Next Generation Sequencing (NGS): Dry and Wet Lab Techniques in Illumina iSeq100, NextSeq 1000/2000 and Oxford NanoPore from CZ Biohub, San Francisco, USA - Genome Analysis Tool (CZID, NextFlow, Docker, Mega, Geneious Prime, CLUSTAL) - Programming Languages (R, MATLAB, Command Line Interface) and Bioinformatics Tools (Exon Prediction, Splicing Sites, ORF Finder, Promoter Prediction, Expasy, AAProp, NPSA, Raptorx, PSIPRED, Homology Modelling: SWISSMODEL, Phyre2; VecScreen, IQTREE, AMR Prediction) - Microbiological and Animal Culture Techniques, Bacteriophage Isolation, PBMC (Peripheral Blood Mononuclear Cells) Isolation and Processing - Flow Cytometry and data analysis - Laboratory experience in automated liquid handling equipment (Opentrons) - Laboratory experience in recombinant technology/genetic engineering - Laboratory experience in ELISA, Luminex FlexMap3D, Protein Production and Purification from Massachusetts General Hospital, Harvard Medical School, Boston, USA - Real Time Polymerase Chain Reaction (RT-PCR) Technique (including MuDT, DPO, TOCE technology) - Laboratory experience in molecular detection of SARS-CoV-2 through RNA Extraction and Real-Time Multiplex PCR - Laboratory experience in various fields of research (infectious disease, molecular biology, genome sequencing, serology, bioinformatics, microbiology, public health, community-based research) - System Biology Tools (Cytoscape, Cain: Stochastic Simulations)

- Statistical Analysis Software (GraphPad Prism, Anova, STATA, SPSS)
- Trainer in Genomics (NGS), Molecular Methods (Real Time PCR, Multiplex PCR), Bioinformatics and Serological Methods (ELISA)

Organisational / managerial skills

- Abstract Review Committee, International Conference for Biotechnology and Biosciences 2025
- Lead Trainer and Organiser for various workshops, training and conferences at DHKUH
- Reviewer for PLOS Neglected Tropical Diseases, BMC Infectious Diseases, BMC Microbiology, Discover Medicine, Virology, and Tropical Medicine and Health
- Leadership, management and organisational experience from work as Program Coordinator and currently, as Research Project Coordinator/Manager
- Organised and participated various national and international level trainings while working as Program Coordinator at Department of Biotechnology, Kantipur Valley College.
- Managerial Skills as a part of training in Accelerated Business Incubation Program, Nepal
- Participant of Leadership training "Lead to Impact" organised by JCI Patan.
- Served as Volunteer and Organiser for National and International Conferences: Conservation Biology and Wildlife Genetics 2013; Biofuel Conference 2013, National Biotechnology Conference 2012

REFERENCES:

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