ANNUAL REPORT

"The experience from the past to today"

ANNUAL REPORT
2076/077

Tribhuvan University
Institute of Science and Technology
Central Department of Microbiology
(Estd. 14 November 1990)

Kirtipur, Kathmandu
Phone: 01-4331869, Email: cdm1990@microbiotu.edu.np
Website: www.microbiotu.edu.np

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FY 2076076 (2019/020)

Central Department of Microbiology

Tribhuvan University

Kirtipur, Kathmandu, Nepal

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Report Preparation Team

Dr. Megha Raj Banjara, Head of Department and Associate Professor
Prof. Dr. Anjana Singh, Professor
Prof. Dr. Prakash Ghimire, Professor
Mr. Binod Lekhak, Associate Professor
Dr. Komal Raj Rijal, Associate Professor
Dr. Devraj Joshi, Associate Professor
Ms. Reshma Tuladhar, Lecturer
Mr. Nabaraj Adhikari, Lecturer
Mr. Upendra Thapa Shrestha, Lecturer
Mr. Navaraj Karki, Section Officer
Mr. Ramesh Ghimire, Main Account Assistant

Executive Summary

This annual report summarizes the different activities conducted and progress made by the Central Department of Microbiology, Tribhuvan University in the fiscal year 2076/2077 (17 July 2019 to 15 July 2020). Central Department of Microbiology has 3 Professors, 4 Associate Professors, and 7 Lecturers. Most of the faculties have PhD and others are in the process of completing PhD. The department is providing administrative services through eight administrative staff. There are six laboratory support staff in the department. The department has 30 students enrolled in the first semester of M.Sc. programme this year. The proportion of female students in the M.Sc. programme increased every year in the last three years. In case of Ph.D. microbiology programme, in academic year 2076/077, 3 male and 3 female students were enrolled. The department purchased some laboratory equipment for microbiology and molecular biology in FY 2076/077. The teachers of the department involved in national and international activities including academic and consultancy services. The department supported Nepal Government and Provincial Government to establish and operate COVID-19 diagnostic laboratories. One PhD and 25 M.Sc. students from the department were graduated in microbiology in FY 2076/077. The faculties of the department published 30 research articles in the national and international journals in this fiscal year.

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Background

Central Department of Microbiology established in 1990 under Institute of Science and Technology (IOST) at Tribhuvan University is providing advanced level Microbiology education in the country. The department is offering Master's and Ph. D. Degree courses in Microbiology. Since its establishment, department is able to produce more than 558 Masters graduates and 7 doctoral level graduates. The department is enriched with highly qualified, skillful and competitive faculty members having specializations in various fields of microbiology: medical, public health, biotechnology, environmental, food and agriculture microbiology. In addition to the expert level faculties, department also has good support staff in the laboratory, administration and finance to support departments day to day operation of teaching learning and research activities.

Masters level Microbiology course of Tribhuvan University is designed and timely revised in such a way that it has been able to include global developments in science and technology in the curriculum. Initially for first 15 years, the Masters course was based on annual system, which was revised in 2013 to move on semester-based system. The course from the very beginning has made provision of a compulsory dissertation based on the short original research, which student is supposed to complete with supervision of the faculty supervisor; providing opportunity to learn research methodology and document research findings in the form of a thesis and or original research published in a peer reviewed journal. Recently, there is increasing trends of publishing the articles in national and international journals. The department also encourages the faculties for research and grant applications, as and when available. The department from its beginning has been able to conduct, research in milk, meat, water, other foods, medical/health particularly in vector borne diseases, vaccines, laboratory capacity assessment and strengthening, conducting trainings in quality assurance systems, conducting training on malaria microscopy, climate change and its impact on vector borne and water borne diseases, assessment of antimicrobial use and resistance status in the country in collaboration with the different agencies of the Government and UN agencies.

The department has its own building with teaching/demonstration rooms and teaching laboratory equipped with basic instruments required for day to day

student experimentations. Internet and small departmental library facilities are added assets in the department for research activities.

This annual report summarizes the different activities conducted and progress made by the department in fiscal year 2076/2077 (16 July 2019 to 15 July 2020). This annual report comprises human resource capacity of the department, academic progress of the department including pass rate trend analysis, academic programs, educational pedagogy, physical structure status, activities of the faculties, students graduated in the fiscal year, and publications of articles from the department in national and international journals. Further, it also provides information on contribution of the department in controlling coronavirus disease-19 (COVID-19).

Human Resource Capacity of the Department

Central Department of Microbiology has 3 Professors, 4 Associate Professors, and 7 Lecturers. Seven faculties have PhD degree and most of others are in the process of completion of their PhD degree. Seven faculties have already enrolled in the PhD programme and they are in different stages of their research and completion process.

Table 1: Teaching faculties in the department, FY 2076/077

Particulars	Total	Male	Female	PhD	Non-PhD
Professors	3	2	1	3	-
Associate Professors	4	4	-	3	1
Lecturers	7	2	5	1	6
Teachers on leave	6	2	4	-	-

The department is providing administrative services through eight administrative staff. There are six laboratory support staff in the department.

Table 2: Administrative and laboratory staff in the department, FY 2076/077

Particulars	Total	Male	Female
Officer level	2	1	1
Non-officer level	6	4	2
Laboratory support staff	6	5	1

Academic Progress

Student enrolment trend

In every academic year, the department has 30 students enrolled in the first semester of M.Sc. programme. In the following semesters, there was drop out of some students. The proportion of female students in the M.Sc. programme was more every year than male students. The proportion of female students in the M.Sc. programme increased every year in the last three years. In academic year 2076/077, 24 female and 6 male students have been enrolled in the M.Sc. Microbiology first semester.

In case of Ph.D. microbiology programme, in academic year 2076/077, 3 male and 3 female students were enrolled.

Table 1: Level wise enrolment trend analysis of the last three years disaggregated by female and educationally disadvantaged students

Year	M.Sc.		Ph.D.	
	Male	Female	Male	Female
2074/075	8	22	2	2
2075/076	7	23	2	3
2076/077	6	24	3	3

Pass rate trend analysis

The pass rate trend analysis showed that the pass rate of the students is greater than ninety percent every year. Pass rate is relatively high in female students than the male students. The pass rate of students enrolled in AY 2075/076 in the M.Sc. first semester was hundred percent.

Table 2: Pass rate trend analysis of the last three years of M.Sc. students disaggregated by female

Enrollment year	Semester	Total students		Passed students	
		Male (%)	Female (%)	Male (%)	Female (%)
2073/074	First	7 (23.33)	22 (76.67)	6 (85.71)	21 (91.30)
	Second	7 (25.0)	21 (75.0)	7 (100.0)	21 (100.0)
	Third	7 (25.0)	21 (75.0)	7 (100.0)	21 (100.0)
	Fourth	7 (25.0)	21 (75.0)	7 (100.0)	21 (100.0)
2074/075	First	8 (26.66)	22 (73.33)	7 (87.5)	21 (95.45)
	Second	8 (26.66)	22 (73.33)	8 (100.0)	22 (100.0)
	Third	8 (26.66)	22 (73.33)	8 (100.0)	22 (100.0)
	Fourth*	-	-	-	-
2075/076	First	7 (23.33)	23 (76.67)	7 (100.0)	21 (100.0)**
	Second*	7 (25.0)	21 (75.0)	-	-
	Third	-	-	-	-
	Fourth	-	-	-	-

*Internship/second semester examination have been postponed because of COVID-19 pandemic since March 2020 (Chaitra 2076).

**Two students drop-out in the first semester and all students who appeared in the examination passed the first semester examination.

Academic Programs

Central Department of Microbiology offers courses on M.Sc. and Ph.D. degree in Microbiology. The course of Ph.D. Microbiology has been scheduled for three years with two semesters courses and other semesters dissertation. The course of M.Sc. Microbiology has been divided into four semesters within two academic years. The first semester course covers the disciplines of General Microbiology, Immunology, Microbial Genetics, Microbial Biochemistry and practical on these courses. The second semester offers track selection among four different disciplines of Microbiology for specialization. Among four disciplines from second semester the department has offered Medical Microbiology and Public Health Microbiology. The fourth semester is completely skill development and research oriented that includes internships and dissertation.

Educational Pedagogy

There is close communication between the student and teacher. The class room teaching is divided into theoretical subject matter conducted in the class room as well as practical content delivered in the laboratory. The class rooms are equipped with LCD-projector, overhead projector, and white board. The students also visit laboratories and industries. The students are given enough opportunity to address their query in the subject matter. Class assignment, project work, internal assessment and final examination are conducted to evaluate the students. The fourth semester of M.Sc. is completely skill development and research oriented that includes internships and dissertation.

Physical Progress

The department purchased and maintained the following equipment during the FY 2076/077:

Real Time PCR-1

Bio-safety cabinet-1

Nano-drop-1

Gel doc-1

The department purchased few books required for the students. The department requested Central Library to purchase reference books for M.Sc. microbiology.

Participation of Faculties in International Activities, FY 2076/077

1. Prof. Dr. Anjana Singh participated in an international conference "Bio-engineering and life sciences" organized by New Arts, Commerce and Science College, Ahmednagar, India on 11-12 February 2020.
2. Prof. Dr. Prakash Ghimire participated in a meeting "Global Research and Innovation Forum: Towards a roadmap for the 2019-novel coronavirus" organized by Emergency Working Group, World Health Organization, Geneva, Switzerland, on February 11-12, 2020.
3. Prof. Dr. Prakash Ghimire participated in a meeting of Forum for Ethical Review Committees in Asia and the Western Pacific organized by WHO-TDR and University Sains Malaysia on 24-27 November 2019 in Penang, Malaysia.
4. Prof. Dr. Prakash Ghimire participated in a meeting organized by Indian Council of Medical Research (ICMR) organized in New Delhi on 3-4 December 2019.
5. Prof. Dr. Prakash Ghimire participated in a meeting organized by International Vaccine Institute, Seoul South Korea on 11-15 November 2019.
6. Prof. Dr. Prakash Ghimire participated in a meeting "Creation of regional platform on infectious diseases of public health importance" organized by Indian Council of Medical Research and WHO-SEARO on August 27-28, 2019 in New Delhi, India.

7. Assoc. Prof. Dr. Dev Raj Joshi visited as a scholar in the invitation of Research Center for Eco-environmental sciences, Chinese Academy of Sciences, Beijing, China on 26 July to 10 August, 2019.
8. Assoc. Prof. Dr. Komal Raj Rijal participated in an international KeyStone Symposia on 30 October-2 November, 2019 in Addis Ababa, Ethiopia. He presented the paper entitled "Relapse pattern of *Plasmodium vivax* in far-western Nepal".
9. Lecturer Upendra Thapa Shrestha participated in Molecular data on infectious disease short course on 4-25 September, 2019 organized by Institute of Tropical Medicine, Antwerp, Belgium.

News/Activities in the Department FY 2076/077

1. Central Department of Microbiology, Tribhuvan University actively participated and co-organized Asia Pacific Malaria Elimination Network (APMEN) Vivax Working Group meeting in collaboration with Asia Pacific Malaria Elimination Network (APMEN), Epidemiology and Disease Control Division (EDCD), Department of Health Services, Nepal on 15-16 October 2019 in Radisson Hotel, Kathmandu.
2. Faculties of Central Department of Microbiology, Tribhuvan University actively participated in Southeast Asian Regional Symposium in Microbial Ecology (SARSME 2020) in Pokhara on 10 -14 February, 2020.
3. Reshma Tuladhar, lecturer of the department has been awarded Doctor of Philosophy from Amity University, New Delhi, India on 8 November 2019. The title of her PhD thesis is "Incidence of Dengue and Diversity of Dengue Virus in Human and *Aedes* Vector".
4. Central Department of Microbiology, Tribhuvan University organized "Training on Bioinformatics and Data Management" on 16-20 February, 2020 for PhD students of the department. Twenty-four participants got benefitted from the training. The participants of the training program were Ph.D. Microbiology students and teachers from constituent campuses of Tribhuvan University in Kathmandu valley. The training was organized with the financial support from University Grants Commission, Nepal.
5. Tribhuvan University Journal of Microbiology (TUJM)-Volume 6 (1) published on the occasion of Microbiology day on 28 Kartik, 2076 (14 November, 2019).

Photograph 1: Participants and facilitators of Training on Bioinformatics and Data Management

6. Role of Central Department of Microbiology, Tribhuvan University in COVID-19 Control

Coronavirus disease-19 (COVID-19) has affected global population with high morbidity and mortality in short period of time. After the report of first case of COVID-19 in 23 January 2020, it took almost two months for the report of other cases and since then cases are rising rapidly. The ongoing outbreak presents many public health management challenges due to limited understanding of risk factors for infection and transmission, pathogenesis and effective preventive measures, as well as limited options of laboratory diagnosis. Government of Nepal, Ministry of Health and Population has requested Tribhuvan University, Central Department of Microbiology to provide technical support to COVID-19 case diagnosis. Accordingly, till the date the department has technically supported to establish four diagnostic laboratories and trained laboratory personnel for detecting SARS-CoV-2 using Real Time PCR. In order to aware authorities, scientific community and general people, the faculties of the department disseminated updated knowledge on current pandemic through series of media interviews. However, due to lack of recognition as health worker for Microbiology graduates of the department, they could not participate in the routine diagnosis of patient in the laboratory. If granted the license, they can utilize their full potential for infectious disease control to support health sector. Therefore, it is essential to use microbiologist from Tribhuvan University for strengthening the laboratory capacity at Provincial, Municipal and National level to mitigate the present crisis of Covid-19 from Nepal.

Activities of Central Department of Microbiology, Tribhuvan University for Combating COVID-19

The faculty members of the Central Department of Microbiology, Tribhuvan University participated in national and provincial efforts to control Covid-19 in different capacities. A team of faculties and microbiologists from the department were involved in collection of blood samples from the people in quarantine from Kailali and Kanchanpur districts. The team provided technical support to set up Covid-19 diagnostic real time PCR laboratories in four diagnostic centers/hospitals namely- Karnali Province Surkhet, province 5 Bhairahawa, TU Teaching Hospital and province 2 Janakpur. Recently, the "Interim Guideline for Covid-19 Testing in Nepal" has proudly recognized M.Sc. medical microbiology graduates as a human resource for conducting real time PCR test for SARS-CoV-2 diagnosis.

The Covid-19 is newly emerged disease with limited textbook knowledge. This created a lot of havocs and misinformation regarding the etiology, transmission, prognosis, diagnosis and containment. Central Department of Microbiology and its faculties became credible source of scientific information on Covid-19. Most of televisions, newspapers and electronic media consulted faculties of Central Department of Microbiology, Tribhuvan University and microbiologists to aware people on coronavirus (SARS-CoV-2).

Collection of blood samples to investigate coronavirus infection in Kailali and Kanchanpur districts

With the request from Nepal Health Research Council (NHRC) and National Public Health Laboratory (NPHL) on 9 April, 2020 to provide microbiologists for blood sample collection and testing, team of 4 microbiologists visited Kailali and Kanchanpur and collected blood samples to validate RDT kit for detection of SARS-CoV-2 infection.

Photograph 2: Microbiologists in personal protective equipment (PPE) to collect samples for Covid-19 detection

Team of Central Department of Microbiology, Tribhuvan University to set up Covid-19 Diagnostic Laboratory

A team of Central Department of Microbiology comprised of two faculties- Assoc. Prof. Dr. Megha Raj Banjara and Assoc. Prof. Dr. Dev Raj Joshi and two microbiologists Mr. Anil Shah and Mr. Biraj Lohani visited Surkhet in request of Provincial Government, Karnali Province to Tribhuvan University to set up Covid-19 diagnosis real time PCR laboratory. The team supported the provincial hospital to set up laboratory with biosafety, trained 9 laboratory technologists/ technicians on RNA extraction from swab samples, reagent preparation, performing real time PCR and interpreting the test results.

Photograph 3: SARS-CoV-2 diagnostic laboratory set up in Surkhet

Similarly, Province 5 government requested the department to support in setting SARS-CoV-2 diagnosis laboratory. PhD student Mr. Bishnu Bahadur Rayamajhi from Central Department of Microbiology, Tribhuvan University set the laboratory and trained lab technologists and technicians for diagnosing SARS-CoV-2 using real time PCR and safety precautions.

A team of faculties Assoc. Prof. Dr. Megha Raj Banjara and Assoc. Prof. Dr. Dev Raj Joshi and microbiologists Mr. Anil Shah and Mr. Biraj Lohani from Central Department of Microbiology supported to set up real time PCR laboratory in TU Teaching Hospital to diagnose SARS-CoV-2 infection.

7. Dr. Shyam Prakash Dumre from Nagasaki University, Japan delivered a talk entitled "Dengue research: From basic science to clinical application" on 23 Mangsir, 2076 (9 December, 2019), among the students and faculties of Central Department of Microbiology, Tribhuvan University.
8. Delegation from Hosei University, Fujimi, Chiyoda-ku, Tokyo, Japan lead by Prof. Koji Kodera paid courtesy visit to Central Department of Microbiology, Tribhuvan University on 28 February, 2020.

Memorandum of Understanding (MoU) of Central Department of Microbiology, Tribhuvan University with Different Institutes

1. Institute of Tropical Medicine, Antwerp, Belgium, on 19 August 2019 for 3 years.
2. BP Smriti Samudayik Sahakari Hospital, Basundhara, Kathmandu, on 2 September 2020 for 5 years.
3. Leland Stanford Junior University, California, USA, on 18 August 2019 for one year.

Students Graduated in FY 2076/077 and Their Dissertations

Doctor of Philosophy

1. Dhruba Kumar Khadka- Identification of Rpob gene (β-sub unit of DNA dependent RNA polymerase) in rifampicin resistant *Mycobacterium tuberculosis* among retreatment tuberculosis patients in Nepal (Defense date: 7 August 2019)

Master of Science

1. Roshan Timsina- Screening of *erm* gene of inducible clindamycin resistant *Staphylococcus aureus*
2. Rekha Ghimire- Methicillin resistance and inducible clindamycin resistance pattern of *Staphylococcus aureus* isolates from children in Kanti Children's Hospital
3. Keshav Prasad Koirala- Phenotypic characterization of pigment producing actinomycetes isolated from Shivapuri-Nagarjun national park and adjoining areas with high level of radioactivity
4. Saroj Khadka- Screening of antibacterial activity of some medicinal plants and shilajit
5. Manisha Karna- Characterization of bacterial isolates from intensive care unit of national medical college and teaching hospital Birgunj, Nepal
6. Saroj Khadka- Susceptibility to fluoroquinolones and *gyrA* ser83 mutation in *Salmonella enterica* serovar Typhi at a referral hospital of Kathmandu Valley
7. Babita Malla- Antibacterial activity of lemon juice on multidrug resistant *Klebsiella* species harboring blaOXA-48 gene
8. Yadav Prasad Pokharel- Intestinal parasitic infestation of school going children in Harakpur village, Morang
9. Kiran Koirala- Antimicrobial susceptibility profile of *Escherichia coli* isolated from urinary tract infection from patients visiting to Itahari hospital, Itahari, Sunsari, Nepal
10. Deepa Karki- Molecular detection of mcr-1 gene in multidrug resistant *Escherichia coli* and *Klebsiella pneumoniae* isolates from clinical specimens
11. Anupama Gurung- Identification and molecular detection of blaNDM-1, blaOXA-23-like genes from carbapenem resistant *Acinetobacter calcoaceticus* baumanii complex
12. Sanjita Khadka- In vitro antibacterial efficacy of *Aloe barbadensis* extract against biofilm producing and methicillin resistant *Staphylococcus aureus* harboring *pvl* gene
13. Anil Kunwar- Plasmid profiling and detection of *blaZ* gene in methicillin resistant *Staphylococcus aureus* screened from different clinical samples
14. Bijaya Muktan- Screening of *mcr-1* gene being mediated colistin resistance in

Escherichia coli isolates from clinical and poultry specimens

15. Sujata Bajracharya- Plasmid profiling of nalidixic acid resistant *Escherichia coli* from clinical samples
16. Riju Maharjan- Emergence of multidrug resistant bacterial infection of lower respiratory tract among people living with HIV
17. Narayan Sharma Bashyal- Determination of vancomycin susceptibility against MRSA from nasal carrier among children in selected schools
18. Sayara Bista- Detection of *mcr-1* gene from colistin resistant *Escherichia coli* isolated from colibacillosis suspected poultry liver
19. Priya Bhuju- Assessment of physico-chemical and microbiological parameters and prevalence of antibiotic resistant bacteria in water sources of Bhaktapur
20. Sushma Gurung- Detection of *OXA-48* gene in carbapenem resistant uropathogenic *Escherichia coli* and *Klebsiella pneumoniae*
21. Prabin Dawadi- Activation of *bcsA* gene in correlation with *csgD* gene for the production of cellulose by hydrogen peroxide stimulation in uropathogenic *Escherichia coli*
22. Ashim Rai- Antimicrobial susceptibility pattern of *Staphylococcus aureus* and determination of inhibitory effects of *Alium sativum* extract on its biofilm production
23. Anil Pokhrel- Sero-prevalence of scrub typhus in febrile patients visiting Sukraraj Tropical and Infectious Disease Hospital
24. Samjhana Kapali- Comparison of nasal colonization of MRSA in people living with HIV and healthy community people
25. Upasana Ghimire- Biofilm formation and drug resistance pattern of *Acinetobacter baumanii* isolated from clinical specimens

Publications of Articles from the Department's Faculties, FY2076/077

1. Shrestha D, Shrestha R, Hendriksen R, Sharma L, Bhatta D. Human skin bacterial flora differ with altitudes in different ethnic groups of Nepal. *Asian Journal of Medical Sciences* 2019; *10*(6), 11-17. https://doi.org/10.3126/ajms.v10i6.25205
2. Gurung S, Kafle S, Dhungel B. Adhikari N, Thapa Shrestha U, Adhikari B,

Banjara MR, Rijal KR, Ghimire P. Detection of OXA-48 gene in carbapenem -resistant *Escherichia coli* and *Klebsiella pneumoniae* from urine samples. *Infect Drug Resist.* 2020;13: 2311-2321.

3. Thapa Shrestha U, Shrestha S, Adhikari N, Rijal KR, Shrestha B, Adhikari B, Banjara MR, Ghimire P. Plasmid Profiling and Occurrence of β-Lactamase Enzymes in Multidrug-Resistant Uropathogenic *Escherichia coli* in Kathmandu, Nepal. *Infect Drug Resist*. 2020;13:1905-1917. Published 2020 Jun 23. doi:10.2147/IDR.S250591

4. Lamichhane K, Adhikari N, Bastola A, Devkota L, Bhandari P, Dhungel B, Thapa Shrestha U, Adhikari B, Banjara MR, Rijal KR, Ghimire P. Biofilm-Producing *Candida* Species Causing Oropharyngeal Candidiasis in HIV Patients Attending Sukraraj Tropical and Infectious Diseases Hospital in Kathmandu, Nepal. *HIV AIDS (Auckl)*. 2020;12:211-220. Published 2020 Jun 15. doi:10.2147/HIV.S255698.

5. Raut S, Rijal KR, Khatiwada S, Karna S, Khanal R, Adhikari J, Adhikari B. Trend and Characteristics of *Acinetobacter baumannii* Infections in Patients Attending Universal College of Medical Sciences, Bhairahawa, Western Nepal: A Longitudinal Study of 2018. *Infect Drug Resist*. 2020;13:1631-1641. Published 2020 Jun 8. doi:10.2147/IDR.S257851.

6. Thapa S, Adhikari N, Dhungel B, Thapa M, Thapa Shrestha U, Banjara MR, Rijal KR, Ghimire P. Etiology of Ocular Infections and Minimum Inhibitory Concentration of Multidrug-Resistant Staphylococcus aureus Isolates to Vancomycin, Ciprofloxacin and Chloramphenicol". Acta Scientific Microbiology(ISSN: 2581-3226). 2020; 3(6): 134-145.

7. Pokharel S, Raut S, Rijal KR, Adhikari B. COVID-19 pandemic, public health preparedness in Nepal and one health approach [published online ahead of print, 2020 May 29]. Disaster Med Public Health Prep. 2020;1-3. doi:10.1017/dmp.2020.172.

8. Ghimire P, Rijal KR, Adhikari N, Thakur GD, Marasini B, Thapa Shrestha U, Banjara MR, Pant SK, Adhikari B, Dumre SP, Singh N, Pigeon O, Chareonviriyaphap T, Chavez I, Ortega L, Hii J.The durability of long-lasting insecticidal nets distributed to the households between 2009 and 2013 in Nepal. Trop Med Health. 2020; 48: 36. https://doi.org/10.1186/s41182-020-00223-w.

9. Kayastha K, Dhungel B, Karki S, Adhikari B, Banjara MR, Rijal KR, Ghimire P. Extended-Spectrum β-Lactamase-Producing *Escherichia*

coli and *Klebsiella* Species in Pediatric Patients Visiting International Friendship Children's Hospital, Kathmandu, Nepal.Infect Dis (Auckl). 2020 Feb 27;13:1178633720909798. doi: 10.1177/1178633720909798. eCollection 2020.

10. Bhattarai V, Sharma S, Rijal KR, Banjara MR. Co-infection with Campylobacter and rotavirus in less than 5-year-old children with acute gastroenteritis in Nepal during 2017-2018.BMC Pediatr. 2020 Feb 13;20(1):68. doi: 10.1186/s12887-020-1966-9.

11. Marahatta SB, Yadav RK, Giri D, Lama S, Rijal KR, Mishra SR, Shrestha A, Bhattrai PR, Mahato RK, Adhikari B. Barriers in the access, diagnosis and treatment completion for tuberculosis patients in central and western Nepal: A qualitative study among patients, community members and health care workers. PLoS One. 2020 Jan 15;15(1): e0227293. doi: 10.1371/journal.pone.0227293. eCollection 2020.

12. Thapa Shrestha U, Adhikari N, Kafle S, Shrestha N, Banjara MR, Steneroden K, Bowen R, Rijal KR, Adhikari B, Ghimire P. Effect of deworming on milk production in dairy cattle and buffaloes infected with gastrointestinal parasites in the Kavrepalanchowk district of central Nepal. Veterinary Record Open 2020;7: e000380. doi:10.1136/vetreco-2019-000380.

13. Guragain N, Pradhan A, Dhungel B, Banjara MR, Rijal KR, Ghimire P. Extended Spectrum Beta-lactamase Producing Gram Negative Bacterial Isolates from Urine of Patients Visiting Everest Hospital, Kathmandu, Nepal. Tribhuvan University Journal of Microbiology, 2019;6(1): 26-31.

14. KC R, Adhikari S, Bastola A, Devkota L, Bhandari P, Ghimire P, Adhikari B, Rijal KR, Banjara MR, Ghimire P. Opportunistic Respiratory Infections in HIV Patients Attending Sukraraj Tropical and Infectious Diseases Hospital in Kathmandu, Nepal. HIV AIDS (Auckl). 2019 Dec 27; 11:357-367. doi: 10.2147/HIV.S229531. eCollection 2019.

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10.1186/s13104-019-4574-8.

17. Sharma S, Acharya J, Banjara MR, Ghimire P, Singh A. Comparison of acridine orange fluorescent microscopy and gram stain light microscopy for the rapid detection of bacteria in cerebrospinal fluid. BMC Res Notes 13, 29 (2020). https://doi.org/10.1186/s13104-020-4895-7

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ANNEX-I
Faculties

Dr. Megha Raj Banjara
Associate Professor & Head of Dept.

Prof. Dr. Anjana Singh
Professor

Prof. Dr. Dwij Raj Bhatta
Professor

Prof. Dr. Prakash Ghimire
Professor

Mr. Binod Lekhak
Associate Professor

Dr. Komal Raj Rijal
Associate Professor

Dr. Devraj Joshi
Associate Professor

Ms. Reshma Tuladhar
Lecturer

Ms. Shaila Basnyat
Lecturer

Ms. Supriya Sharma
Lecturer

Ms. Purnima Baidya
Lecturer

Ms. Manita Aryal
Lecturer

Mr. Nabaraj Adhikari
Lecturer

Mr. Upendra Thapa Shrestha
Lecturer

ANNEX-II

Staff

Navaraj Karki
Section Officer

Raiman Shakya
Main Office Assistant-Store

Ramesh Ghimire
Main Account Assistant

Bijaya Laxmi Maharjan
Lab Assistant

Bimala Pandey
Account Assistant

Madhukar Thapa
Senior Lab Boy

Ramesh Maharjan
Senior Lab Boy

Hikmat Lal Shrestha
Senior Lab Boy

Diwakar Thapa
Senior Lab Boy

Ramesh Khadka
Senior Lab Boy

Akal Man Maharjan
Office Assistant

Shyam Tamang
Office Helper

Iswori Khadka
Office Helper

Pabitra Deula
Office Helper

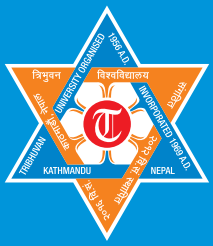
ANNEX-III

Annual budget of the Department with details of income and expenditure, Fy 2076/077

२०७७ असार

लेखा	वजेट निकाशा	थप वजेट	आन्तरिक श्रोत वजेट	धरौटी निकाशा	वर्षको शुरु पेश्की	जम्मा	खर्च	हालको वाँकीपेश्की	जम्मा	वँकी
	२	३	४	५	६	२+३+४+५+६।७	८	९	८+९।१०	७-१०।११
०१/००१			०			०				०
०१/००२			५००००००			५००००००				५००००००
०१/००४			१००००००			१०००००.००			०.००	१०००००.००
०१/००६			१०००००००			१००००००.००			०.००	१००००००.००
०१/००७			३०००००००			३००००००.००	५६४७१७५.००		५६४७१७५.००	२४३५२८२५.००
०१/००८			४००००.००			४००००.००	२२५३५०.००		२२५३५०.००	१७४६५०.००
०१/००९			०.००			०.००	०.००		०.००	०.००
०१/०१०			४०००००.००			४०००००.००	१०७६२३.४६		१०७६२३.४६	३८९२३७६.५४
जम्मा	०	०.००	९५४००००.००			९५४००००.००	५९८०१४८.४६		५९८०१४८.४६	३९४१९८५१.५४
०९/००१ क										
०९/००१क	७९८१०००	८९५३००.००				८८७६३००.००	८८७६२३५.००	०.००	८८७६२३५.००	६५.००
०९/००१ख			३००००.००			३००००.००	५१७५०.००		५१७५०.००	२४८२५०.००
०९/००२	४३३९०००	१०३८८००.००	१३८०००.००			५५१५८००.००	५५१५७०१.००		५५१५७०१.००	९९.००
०९/००३	९९९०००	१७३००.००				१०१६३००.००	९८१७२६.००		९८१७२६.००	३४५७४.००
ग्रेड		०.००				०.००				०.००
०९/००४	११३७०००	१८२२००.००				१३१९२००.००	१३१९०२१.६०		१३१९०२१.६०	१७८.४०
०९/००५ उपदानकोष	२९५०००	५२३००.००				३४७३००.००	३४७२३३.५०		३४७२३३.५०	६६.५०
०९/००५ ख			१६२३४०००.००						०.००	
०९/००६			१०००००.००			१०००००.००	५२२२४८.००		५२२२४८.००	४७७७५२.००
०९/००७			१००००.००			१००००.००	५३८९५.००		५३८९५.००	४६१०५.००
०९/००८			३००००.००			३००००.००	२५९२६.००		२५९२६.००	२७४०७४.००
०९/०११			१५००००.००			१५००००.००	१२१८०४.००		१२१८०४.००	१३७८१९६.००

लेखा	वजेट निकाशा	थप वजेट	आन्तरिक श्रोत वजेट	धरौटी निकाशा	वर्षको शुरु पेश्की	जम्मा	खर्च	हालको वाँकीपेश्की	जम्मा	वँकी
०९/०१३			५०००००.००			५०००००.००	१९९३३२.००		१९९३३२.००	३००६६८.००
०९/०१६			५००००			५०००००.००	०.००		०.००	५०००००.००
०९/०१७			८०००००.००			८०००००.००	१२२९९७.६०		१२२९९७.६०	६७७००२.४०
०९/०१८			३५०००.००			३५०००.००	३०००.००		३०००.००	३२०००.००
०९/०१९			१००००००.००			१००००००.००	०.००		०.००	१००००००.००
०९/२०			५०००००.००			५०००००.००			०.००	५०००००.००
०९/०२१			२५०००००.००			२५०००००.००	२४९६५.००		२४९६५.००	२२५०३५.००
०९/०२३			७०००००.००			७०००००.००	५९६३०.००		५९६३०.००	६४०३७०.००
०९/०२४क			१८००००००.००			१८००००००.००	१५३८५०.२७		१५३८५०.२७	१६४६१४९.७३
०९/०२४घ			१०००००००.००			१०००००००.००	३२४३०.००		३२४३०.००	९६७५७०.००
०९/०२४च			३००००००.००			३००००००.००				३००००००.००
०९/२६			२००००००.००			२००००००.००				२००००००.००
०९/२७			५०००००.००			५०००००.००				५०००००.००
०९/०२८			१४०००००००.००			१४०००००००.००	१००५४३.००		१००५४३.००	१३८९९४५७.००
९.०२९			३०००००			३००००००.००	०.००		०.००	३००००००.००
०९/०३०			२००००००			२०००००००.००	११८४७१७.४२		११८४७१७.४२	८१५२८२.५८
९.०३१			९००००००			९०००००००.००	१४१९८०३.३५		१४१९८०३.३५	७५८०१९६.६५
जगेर्ा कोष			१६२३४०००			१६२३४०००.००	०.००		०.००	१६२३४०००.००
कूल जम्मा	१४७५१०००					१४७५१०००.००	०.००		०.००	१४७५१०००.००
आम्दानी						०.००	०.००		०.००	०.००
जम्मा	१४७५१०००	२१८५९००.००	६६९४१०००.००		०.००	५१४०९९००.००	२१११६८०८.७४		२१११६८०८.७४	३०२९३०९१.२६
कूल जम्मा	१४७५१०००	२१८५९००.००	१६२३४१०००.००		०.००	२७०९६९५७.२०	२७०९६९५७.२०		०.००	६९७१२९४२.८०



Tribhuvan University

Central Department of Microbiology

(Estd. 14 November 1990)

Kirtipur, Kathmandu
Phone: 01-4331869, Email: cdm1990@microbiotu.edu.np
Website: www.microbiotu.edu.np