

Format for Online Annual/Final Report

1. Project Title: **CRP on Agro-Biodiversity (Sub Proj 6 : Management of VTCC)**
 2. Sanction No.: **CRP/GCD/2014/1362 dt 04.07.2014**
 3. Date of Start: August 2015
 4. Date of Termination: July 2017
 5. Actual Location (Location of research scheme): NCVTCC, ICAR-NRCE Sirsa Road, Hisar-125001, Haryana
 6. Principal Investigator
Name: Dr Sanjay Barua
Designation: Principal Scientist
Division/Section: NCVTCC
Address: NCVTCC ICAR-NRCE, Sirsa Road, Hisar-125001 Haryana
 7. Co-Investigator
Name: Dr. R K Vaid
Designation: Principal Scientist
Division/Section: NCVTCC
Address: NCVTCC ICAR-NRCE, Sirsa Road, Hisar-125001 Haryana
Other Co-Investigators
Naveen Kumar, Taruna Anand, B.C. Bera, Riyesh T
Division/Section: NCVTCC
Address: NCVTCC ICAR-NRCE, Sirsa Road, Hisar-125001 Haryana
- Duration of Project: 3 Years
8. Total amount sanctioned: Rs. 10,50,000
 9. Total amount spent: **1010308.00**
 10. Result of Practical/Scientific value:

The microbial isolates including bacteria, bacteriophages, genomic DNA and recombinant clones isolated from NER are a valuable resource adding to the microbial diversity of the animal microbial repository. These microbial resources can be utilized for updation of diagnostics, vaccines etc besides conserving the microbial resources as per need of the stakeholders.

Papers published in peer reviewed journal (NAAS rating may be given):

- Anand, T., Vaid, R.K., Bera, B. C., Sanjay Barua, Riyesh, T., Virmani, N., Yadav N., and Malik, P. 2015. Isolation and characterization of a bacteriophage with broad host range, displaying potential in preventing bovine diarrhoea. Virus Genes, DOI 10.1007/s11262. **NAAS rating 7.58**
- Taruna Anand , Rajesh Kumar Vaid , Bidhan Ch. Bera , Jitender Singh , Sanjay Barua , Nitin Virmani , Rajukumar K. , Neeraj Kumar Yadav , Dinesh Nagar , Raj K. Singh and B.N. Tripathi Isolation of a lytic bacteriophage against virulent Aeromonas hydrophila from an organized equine farm. J. Basic Microbiol. 2015, 55, 1–6. **NAAS rating 7.82**

(i) Papers presented at scientific meetings:

Taruna Anand, R.K. Vaid, B.C. Bera, Sanjay Barua, Riyesh T., N. Virmani, and B.N. Tripathi (2015). Emergence and spread of antibiotic resistance genes in environmental bacteriophages.

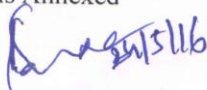
Compendium of XXII Annual convention and National Symposium on "Immunomics and Proteogenomics in Livestock Health & Productivity". Dec 17-19, 2015.pg 56
(i) Manuscripts under preparation: Nil

12. Patents and products developed: Nil

Detailed Progress Report (to be annexed):

Progress report is Annexed

13. Signature:



Name: Dr Sanjay Barua
Designation: Principal Scientist
Principal Investigator:
Date

Director or Head of Institution/Station:



Dr. B. N. Tripathi
Director
NRCE, Sirsa Road,
Hisar-125001 (Haryana)

14. Comments of the Lead Centre Platform Coordinator

15. Remarks of the SMD:

Progress report

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| Name of the project | CRP on Agro-biodiversity (Sub Project 6: Management of VTCC) |
| PIMS Code | OXX03183 |
| Investigators | Sanjay Barua*, R.K. Vaid, Naveen Kumar, Taruna Anand, B.C. Bera, Riyesh T. |

Progress report

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|-------------------------------------|---|
| Immediate objectives to be achieved | <ul style="list-style-type: none">• Exploration of microbial diversity of animal origin in North East Region• Isolation, characterization and accessioning of bacteriophages from animal environment in NE region• Preservation and documentation of the characterized microbial resources. |
| Date of start | August 2015 |
| Tentative date of completion | July 2017 |

Targets for year (2015-16):

- A total of 150 Veterinary microbes, (bacteria, viruses, bacteriophages and clones) will be authenticated and preserved in the repository.
- Viability checking will be conducted for 200 microbial cultures in the repository.

Progress Report for the year 2015-16

- Viability checking of 232 microbial cultures (20 viruses and 212 bacteria) has been carried out during the period.
- A total of 114 Veterinary microbes, including bacteria (89), bacteriophages (07), genomic DNA (10), and clones (08) have been authenticated and preserved in the repository
- 89 bacterial isolates have been processed/authenticated. The accessioned isolates include *E. marmotae*, *E.fergusonii*, *E.coli*, *Klebsiella*, *aeromonas hydrophila*, *Pantoea aglomerans*, *Acrhomobacter spp*, *Pseudomonas spp*, *Vibrio spp*, *Seratia spp*, *Rahnella aquaticus* from different animals viz., pig, deer, elephant, poultry, duck, dog etc.
- 8 clones of 16S RNA genes of different bacteria namely *Aeromonas hydrophila* (from pig), *Aeromonas hydrophila* (from prawn), *E.coli* (from cattle), *E.coli* (from pig), *E.coli* (from Deer), *E.coli* (from Duck), *Staphylococcus* (Elephant), *Aeromonas caviae* (Prawn) received from NER region, were generated and preserved in the repository.
- The genomic DNA of 10 bacteria received from NER region have been isolated and preserved in the repository.
- A total of 20 serum samples (16 bovine and 4 porcine) and 10 pig tissue samples were collected from Meghalaya for virus isolation. These samples are being passaged in cell culture for virus isolation
- The samples viz., Sewage, soil and fecal materials from duck, poultry, goat and piggery farms were collected from NER and processed for bacterial isolation. A

total of 40 bacteria were isolated which were examined morphologically and further purified & preserved in the repository. Both Gram's negative and positive bacilli were obtained with some coryne, cocci and pleomorphic bacteria.

- The purified bacterial isolates were used for enrichment and isolation of bacteriophages from original samples and seven phages were isolated including against Bacillus, Shigella, Caryophanonm, Stenotrophomonas spp.
- These phages have been bulk cultured and concentrated (titre increased manifold) by IM NaCl and PEG. The phage preparation was then subjected to chloroform treatment for purification. These high titre phage concentrates have been preserved at -80°C in the repository.

Technical programme for year (2016-17):

- Exploration of microbial diversity of animal origin in North East Region with special reference to Meghalaya & Manipur
 - A total of 100 Veterinary microbes, (bacteria, viruses, bacteriophages and clones) will be authenticated and preserved in the repository
 - Isolation, characterization and accessioning of bacteriophages from animal environment in NE region
- Viability checking will be conducted for 200 microbial cultures in the repository.