ICAR-National Agricultural Higher Education Project

Project Report (up to December 31, 2023)

Component 1b: Centres for Advanced Agricultural Science and Technology (CAAST)

ICAR-Indian Veterinary Research Institute, Bareilly

CAAST-Advanced Centre for Livestock Health

ICAR-Indian Veterinary Research Institute, Bareilly,
caastivri@gmail.com

Executive summary

Name of the AU: ICAR-Indian Veterinary Research Institute, Bareilly

Project Title: CAAST-Advanced Centre for Livestock Health

<<<<Highlight the broad activities undertaken by your AU under CAAST (in sentence form) with emphasis on achievements for entire project tenure (restrict the highlights to 2-3 paragraphs)>>>>

One of the objectives of the project was to facilitate overseas training among students and faculty where under the project a total 49 PG/PhD students and 22 faculties completed overseas training in reputed universities of the world located at USA, Europe, Australia and Africa. This provided an opportunity to develop linkages with reputed overseas laboratories. A total 16 new mobile Apps were prepared and placed on google play store. One IVRI – Online Veterinary Clinic was launched for benefit of field veterinarians and famers. A total 22 educational video has been prepared and placed on YouTube. Total four designed patents has been granted namely Herd Animal Catcher, Internal Genital Injection Device, Ovarian Cyst Aspiration Cum Ablation Device, Portable Downer and Bovine Stand. The state art of infrastructure were developed by purchasing and establishing high end equipment like Invivo Imaging system, High end data analysis system, Digital droplet real time PCR machine, Ultra centrifuge with rotars and color doppler ultra sound machines. Further for livestock farm automation the animal activity meter and RFID were purchase and installed. For FMD new vaccine VLPs in monovalent form showed good VN titer after booster. The mAb based solid phase competitive ELISA for estimation of FMDV antibodies optimised. PPR Marker vaccine exhibited the same safety and efficacy profiles of the Sungri/96 vaccine. In addition to permitting serological differentiation of infected from vaccinated animals using the newly developed DIVA ELISA for which we are in process of patent filing. Immunogenic baculovirus expressed PCV2 protein in rabbit and Indirect ELISA for PCV2 antibody detection was developed. Safety of B. abortus S19Δper was found to be safe for animal use. Rapid test for Brucella detection is in process. Multiplex PCR and LFA was optimised for detection of Haemoprotozoan disease. The Scientists worked of AMR and formulated herbal alternatives and MDR isolates from animal diarrhoea and surrounding environment were characterised. Genomics approaches for improving health and strategies for ameliorating vaccination stress was worked out. A fully dedicated team Scientists were deployed for COVID-19 testing during concurrent waves of COVID-19 pandemic. The CAAST-ACLH faculties contributed significantly at ICAR-IVRI, Izatnagar campuses as well as ICAR-IVRI, Mukteshwar campuses for timely diagnosis and sharing the test results in collaboration of local administration. All the samples were processed/deconvoluted in BSL-3 facility of Institute. During the period 2.22 lakhs COVID-19 samples were processed by Institute at both campuses. A total 10 MoU were signed with different universities and Institutions.

Several quality publications emerged out from projects. A total 07 books were published with 15 technical bulletin/booklet and 02 status paper. Additionally, 20 leaflets about livestock health/production and 05 pamphlets/advisories about COVID-19 were published in project. More than 100 research papers were published where about 70 % publications were in international journals indexed by **Thomson Reuters** (Clarivate Analytics).

Introduction

<<<<Background, introduction of the project, title and key objectives, intended benefits (restrict the highlights to 2-3 paragraphs-maximum 2-3 pages)>>>>

This project aims at developing skill and entrepreneurship among faculty and students in the livestock health field. For this purpose, activities such as international trainings, student exchange programs, national and international collaborations, distinguished lecture series and courses related to skill development and e-learning etc. are being conducted under this project. The project also focuses on the development of infrastructure necessary for betterment of research activities such as procurement of necessary equipments and renovation as well as maintenance of already established infrastructure. The project is also targeted to develop capacity building of faculty and Students of ICAR-IVRI in the field of vaccinology, diagnostics, genomics and immune nutrition and targets the development of thermostable vaccines for FMD and PPR, combination vaccine for PPR + sheeppox, PPR+ goatpox, DIVA compatible negative marker vaccine for FMD and DIVA enabled Brucella vaccine for cattle/ buffalo. Apart from this, development of new vaccine candidates such as marker vaccine for PPR, CSFV marker vaccine candidate, recombinant PCV-2 and recombinant PPR+sheeppox as vaccine candidates is also a target of this project. Futhermore, advancement in the diagnostics such as developing a companion diagnostics for FMD, DIVA compliant test for PPR, ELISA for PCV-2 antibodies, pen-side diagnostics for Brucella and molecular/serological tests for haemo-parasitic infections in cattle/buffalo makes one of the goals of this project. Moreover, development of pre/probiotic based nutraceuticals and feeding trials for proven nutraceuticles as enhancers of immune competence in vaccinated animals are the immune-nutrition based approaches being followed in this project. Genomic approaches include data generation in real time on health & behavioral parameters and study of immune-competency of animals response to vaccination by SNP chips/ genotyping-by-sequencing (GBS)-based genome-wide association study (GWAS). Other activities of this project include therapeutic intervention for diseases like mastitis and diarrhea caused by AMR and generation of induced pluripotent stem cells and its depository.

Introduction

CAAST-ACLH project is an integrative project which emphasizes on skill development and new advancements in the diagnostic as well as vaccination approaches in the field of livestock health so as to decrease the economical losses related to the health issues of livestock animals. It also encompasses the development of entrepreneurship in this field. For the achievement of

its goal for the betterment of livestock health, it also incorporates study of genomics and immune nutrition. The project also includes the development of required infrastructure for conducting a good quality research. Various training programs, lecture series, overseas visit and international collaborations are being practiced for the fulfillment of the aim of this project. Apart from this, innovative techniques as recombinant vaccine, marker vaccine candidates as well as sensitive methods for diagnosis of various diseases of livestock are being developed under this project.

Key objectives:

Objective 1:

To translate advanced knowledge in the field of livestock health for skill and entrepreneurship development among students and faculty, and empowering other stakeholders

Activities

1. Faculty up gradation through international training
2. PG students sandwich programme covering the identified areas
3. Adjunct / Visiting Professors in the thrust areas
4. Distinguished lecture series/ special lectures required
5. New PG courses development and existing PG courses revision
6. Development of e-content of PG courses
7. Development of certificate courses for skill development in advanced areas
8. Targeted research collaborations with national and international centres of excellence
9. Development of e-learning / ICT tools for effective education, Industry Collaboration and impact assessment:-

   A) Development of Educational Mobile Apps
   B) Development of educational videos on scientific practices & intervention
   C) Development of information system/ expert system
   D) Development of E-Tutorials

Objective 2:

To develop a globally competitive state-of-the-art infrastructure in teaching and research in the proposed thrust areas

Activities

4. Procurement of high-end equipments to support advanced research, teaching and training in the identified areas
4. Renovation of existing infrastructural facilities like challenge animal shed, and select laboratories

1. Key activities carried out under the project during the entire period

1.1. Interventions carried out by AU which helped to improved research effectiveness

Please provide the details about the interventions carried out to make AU reform ready and led to ICAR accreditation. Please write one paragraph for each interventions and/or activities.

<table>
<tr><th>Key interventions</th><th>Remarks/Photographs</th></tr>
<tr><td>1. Faculty up gradation through international training</td><td>Under this capacity building program under CAAST-ACLH project of ICAR-Indian Veterinary Research Institute, Izzatnagar, deputed a total of 22 Core and Associate faculties of project. 14 faculties have complete overseas training in Europe (UK, USA & Netherland). While 06 faculties also complete their one-week overseas training in USA & UK, two faculties complete three month training in Australia and USA. During this period, we faced two COVID-19 waves of pandemic but in spite of those turbulences our one faculty has successfully completed the overseas training by following guidelines of COVID-19 at overseas host institutions. The training significantly improved the teaching and research skill of our faculties.</td></tr>
<tr><td>2.PG students sandwich programme covering the identified areas</td><td>Under this capacity building program, the CAAST-ACLH project of ICAR-Indian Veterinary Research Institute, Izzatnagar, deputed a total of 49 post graduate students to complete overseas training through five batches at 31 reputed University/Institution of 10 different countries (USA, Japan, Spain, Switzerland, Kenya, U.K., Germany France, Austria and Poland). During this period, we faced two concurrent COVID-19 waves of pandemic but in spite of those turbulences our students successfully completed the overseas training by following guidelines of COVID-19 at overseas host institutions. The training significantly improved the skill of our students and most of them are getting good placement in government sector, Post-Doctoral Fellowship at reputed institutions.</td></tr>
<tr><td>3. Distinguished lecture series/ special lectures required</td><td>Under this program total 20 lecture has completed, learned speaker from leading national institutes like CDRI, Lucknow; IIT, Roorke and NIAB, Hyderabad, IASRI, N.Delhi, PME Cell, Bhubneswer, University of Delhi, GBPUAT, Pantnagar, NIH Baltimore USA, IIM kashipur, International Rice Research Institute Kenya, KUAT J &K, The Ohio State University were invited to deliver lectures on various recent topics An overwhelming response of students attendance were observed in all the lecture series. A total of 2543 participants were benefitted by this programme.
Annexure-I</td></tr>
<tr><td>4. New PG courses development and existing PG courses revision</td><td>A total 10 new course developed and two courses revise. The details of the courses is as follows-
<table>
<tr><th>SN</th><th>Title of courses</th><th>Theory/ Practical</th><th>MVSc/ PhD</th><th>Discipline</th><th>Core/ Associate Faculty</th></tr>
<tr><td colspan="4">New courses</td><td></td><td></td></tr>
<tr><td>1.</td><td>Advances in synthetic peptide Biology</td><td>T-1</td><td>MVSc/PhD</td><td>Animal Biotechnology</td><td>Dr A.K. Tiwari</td></tr>
<tr><td>2.</td><td>Advances in synthetic peptide Biology</td><td>P-1</td><td>MVSc/PhD</td><td>Animal Biotechnology</td><td>Dr A.K. Tiwari</td></tr>
<tr><td>3.</td><td>Basic techniques in development of Bioassays and Biosensors</td><td>T-1</td><td>MVSc/PhD</td><td>Animal Biotechnology</td><td>Dr A.K. Tiwari</td></tr>
<tr><td>4.</td><td>Basic techniques in development of Bioassays and Biosensors</td><td>P-1</td><td>MVSc/PhD</td><td>Animal Biotechnology</td><td>Dr A.K. Tiwari/ Dr Praveen Singh</td></tr>
<tr><td>5.</td><td>Electron Microscopy & bio-imaging</td><td>P-1</td><td>MVSc/PhD</td><td>Virology and Biotechnology</td><td>Dr A.K. Tiwari/ Dr Praveen</td></tr>
</table></td></tr>
</table>

					Singh
6.	GLP, GMP in R&D and product development	T-I	MVSc/PhD	Virology and Biotechnology	Dr A.K. Tiwari/Dr Praveen Singh
7.	Epidemiology of AMR and its mitigation strategies	T-I	MVSc/PhD	Vet. Public Health & Epidemiology	Dr. B. R. Singh
8.	Reproductive ultrasonography for farm animals	T I +P I	MVSc & PhD	Veterinary Gynaecology	Dr S.K. Singh
9.	Principles of biosecurity and biosafety	T I	MVSc & PhD	Biotechnology, Standardization/BP Division	Dr A.K. Tiwari
10.	Advances in instrumentation techniques	P I	MVSc & PhD	CIF	Dr Praveen Singh
Existing PG courses revision					
1.	BCT 731/BCT 732 (Content addition SPR and Electrochemical sensing techniques, principal and applications)		PhD	Animal Biochemistry	Dr Praveen Singh
2.	Principles of Genetics		MVSc	Animal Genetics & Breeding	Dr Amit Kumar

5. Development of e-content of PG courses

A total 07 e-books, Atlas/Album Course, PPts, AV aids, short videos, interactive case studies developed. The details of the courses is as follows-

S. No.	Title of courses	MVSc/ PhD	Discipline	Format (e-book, course PPts, i-lectures etc.)
1.	Advances in protein Engineering	MVSc & PhD	Animal Biotechnology	e-book / course PPts
2.	Parasitology Atlas	MVSc/PhD	Veterinary Parasitology	e-Book and Hard Copy
3.	Epidemiology of AMR and its mitigation strategies	MVSc/PhD	Vet. Public Health & Epidemiology	Course PPTs
4.	MCQ Based modules for improving research methodology	MVSc /PhD	Extension Education	e-tutorial
5.	MCQ Based e-modules in extension method and audio visual Aids	MVSc /PhD	Extension Education	e-tutorial
6.	Lecture series on important reproductive facets of livestock	MVSc /PhD	Veterinary Gynaecology	PPT series
7.	Extension Teaching Methods and AV aids	MVSc	Extension Education	Course PPTs

6. Development of certificate courses for skill development in advanced areas

A total of four certificate courses viz., Molecular Biology Techniques In Virus Research, Hybridoma Technology, Animal Cell Culture and Viral Bioassays, Advances in Animal Virus Disease Diagnosis were conducted. The details of the courses are as follows-

S.N	Name of the Course Coordinators	Topic	Campus	Date	Number of participated Students/staff	Gender	
						M	F
1.	Dr. M. A. Ramakrishnan Acting Head, Division of Virology Indian Veterinary Research Institute Mukteswar	Advances in Animal Virus Disease Diagnosis	Mukteswar	18th November 2019 to 2nd December 2019	15	5	10

2.	Dr. Dechamma HJ Principal Scientist Foot and mouth disease virus Research lab Indian Veterinary Research Institute HEBBAL;BANGALORE	Molecular Biology techniques in virus research	Bangaluru	21 Nov2019 to -11 Dec 2019	13	M 6	F 7

3	Dr V Bhanuprakash, Principal Scientist, ICAR-IVRI Bangalore campus	Hybridoma technology	Bangaluru	02nd January 2020 to 22nd January 2020	10	M 4	F 6

Seating from left to right : Dr Suresh H Basagoudanavar, Dr B P Sreenivasa, Dr Aniket Sanyal , Dr V Bhanuprakash, Dr M Hosamani

Standing from left to right: Mr S Abul Kalam Azad, Mr Jagath C C, Dr S Shanmuganathan, Dr Sumanth Kumar R, Dr Harkal Devendra Balasaheb, Dr Deepak Praveen Raj, Ms Shreya Gopinath, Ms Harshita Patangia, Ms Neha G, Dr Amruta Nair, Ms K Kavya, Ms Soniya H, Mrs Nagasupreeta S R, Dr Amitha Reena Gomes, Dr Mamatha GS, Dr Kavitha G, Dr Usharani J

4	Dr.B.P.Srineevasa, Dr.P.Saravanan	Animal Cell Culture and Viral Bioassays	Bangaluru	23rd January 2020 to 12nd February 2020	10	4	6

7. Targeted research collaborations with national and	MoU were signed with MJP Rohilkhand University, Bareilly, (UP), Sri Venkateswara Veterinary University, Tirupati (AP), Acharya Narendra Dev University of Agriculture & Technology, Faizabad (UP), RLB-Central Agricultural University, Jhansi (UP), Maharana Pratap University of Agriculture & Technology, Udaipur (Raj), Govind Ballabh Pant of Agricultural Sciences and Technology, Pantnagar (UK), Sardar Vallabhbhai Patel University of Agriculture & Technology ,Meerut (UP), ICAR-Indian Institute of Agricultural Biotechnology Garhkhatanga, Ranchi (Jharkhand), AIIHPH, Kolkata, Royal

international centres of excellence	Veterinary Corp, Centre and College, Meerut (UP) for upgrading the knowledge and help the student for lab work and Student Faculty exchange program.
8. Development of e-learning / ICT tools for effective education, Industry Collaboration and impact assessment.	**A) Development of Educational Mobile Apps** Continuous technology advancement, fast pace of life and the concept of anywhere and anytime learning has changed the way people access information and learn. Mobiles are one such device that have created a huge transformation in the information access behavior and completely changed the manner of teaching-learning. Mobile phones are now being used on daily basis in place of desktops. One of the major learning mechanisms are the mobile apps. A total 16 mobile apps has developed under CAAST-ACLH project. **B) Development of educational videos on scientific practices & intervention** Twenty two educational video viz., Heat detection in Dairy Animals In Hindi, Heat detection in Dairy Animals In English, Neonatal Calf Management Hindi, Neonatal Calf Management In English, Clean Milk Production In Hindi, Clean Milk Production In English, Artificial Insemination in Dairy Animals Hindi, Artificial Insemination in Dairy Animals In English, Heat detection using rystoscope In Hindi, Heat detection using CrystoscopeIn English, Uterine torsion in cattle &buffaloes In English, Epoxy external skeletal fixation In English, External skeletal fixation for the management of fracture in large animals In English, Tube cystostomy in calf with ruptured bladder In English, Tube cystostomy in goat In English, Tendon Repair in Animal in English, Tube Cystostomy and Urethrotomy in Bull in English, Biosecurity in Poultry farms (Hindi), Biosecurity in Dairy farms (English), Biosecurity in Dairy farms (Hindi), Biosecurity in Pig farms (English), Biosecurity in Pig farms (Hindi) produced and uploaded on You tube **C) Development of information system/ expert system:** Two information system/expert system viz**.,** ICAR-IVRI Veterinary Clinical Care Information System and ICAR-IVRI Information System on Urolithiasis developed under project for PG students in the various areas of Extension Teaching Methods and Audio Visual Aids. **D) Development of E-Tutorials:-** Two E tutorials viz., IVRI-Extension Methods Tutorial Quiz App and IVRI-Research Methods Tutorial App developed while two others are in the process of development.
9.A1 Work Shop & Meetings	**Workshop & Interface Meetings-** A total of 23 workshops and interface meet held under CAAST-ACLH project for upgrading the knowledge and help the student for lab work and Student Faculty exchange program.

1.2. How the facilitative units helped to enhance learning outcomes

Please provide the details of the facilitative units which helped in enhancing learning outcomes of the students and/or faculties. Please note that we may not need to mention all facilitative units created in the AU here, but focus on those which are open for the students/faculties and other stakeholders.

Facilitative unit	*Activity/achievement*	*Remarks/Photographs*

1. **In-Vivo Imaging System-** Under CAAST-ACLH "Advanced Molecular Imager (In-Vivo Imaging System), Model, AMI-HTX, Make Spectral Instruments Imaging, USA has been installed recently in CENTRAL NSTRUMENTATION FACILITY-BIOENGINEERING (CIF Bioeng.). The Advanced Molecular Imager has the capability to acquire images in optical (both luminescence and Fluorescence) and X-ray region for small animals (mice and rats). This IVIS system will facilitate the non-invasive monitoring of disease progression, bio-distribution, oncology, stem cell research, delivery of pharmaceuticals, nanoparticles tracking etc in mice model.	**a).** Strengthen teaching and research programmes of IVRI deemed University students and faculty. **b).** Training for various researchers working in different institute in India	 1: System Facility Incharge with user, 2: Complete Advanced Molecular Imager 3: IVIS Main Console 4: Trainees in workshop, Installed in August 2021, ICAR-IVRI
2. High-End Data System (Computational Genomics Laboratory): The high end server and computer were purchased with Mac workstation/server, window workstation/server, Hi-end computer as working node, digital display and all IT related peripherals for handling and analyses of the big data generated in area of structural and functional genomics. This is unique facility of institute stabilised in CAAST project.	a). Strengthen teaching and research in area of structural and functional genomics. b). Computational genomics refers to the use of computational and statistical analysis to decipher biology from genome sequences and related data, including both DNA and RNA sequence as well as other "post-genomic" data (i.e., experimental data obtained with technologies that require the genome sequence, such as genomic DNA microarrays).	
3. Droplet Digital PCR: This type of PCR machine is one of the unique equipment for investigation of copy number variation of gene in host and pathogen. Till date, equipment was used by students and scientists of several divisions including Division of Biological Standardization, CADRAD, Division of Pathology, Animal Genetics and Breeding, Immunology section and Biological products etc	**a).** Strengthen teaching and research in area of molecular biology. **b).** Digital PCR (dPCR) is the third generation of PCR that enables absolute quantification through partitioning the reaction. Highly sensitive and accurate in molecular detection, this technology has demonstrated applications like trace DNA detection, rare mutation detection and	  **Droplet Generator** **Plate sealer**

	copy number variation	 **Droplet reader**
4. Ultra-centrifuge with rotors: It was procured and established at biological product division of ICAR-Indian Veterinary Research Institute, Bareilly.	The equipment is most required for strengthening research in area of virology and separation of particles/molecule at high RPM.	

1.3. Out-of-box initiatives undertaken by the AU

Please provide the details on out-of-box initiatives undertaken by the AU in one-two paragraph.

Out-of-box initiative	*Activity/achievement*	*Remarks/Photographs*

Unique initiatives undertaken due to <u>Covid-19 disruption:</u>

1. Digital infrastructure

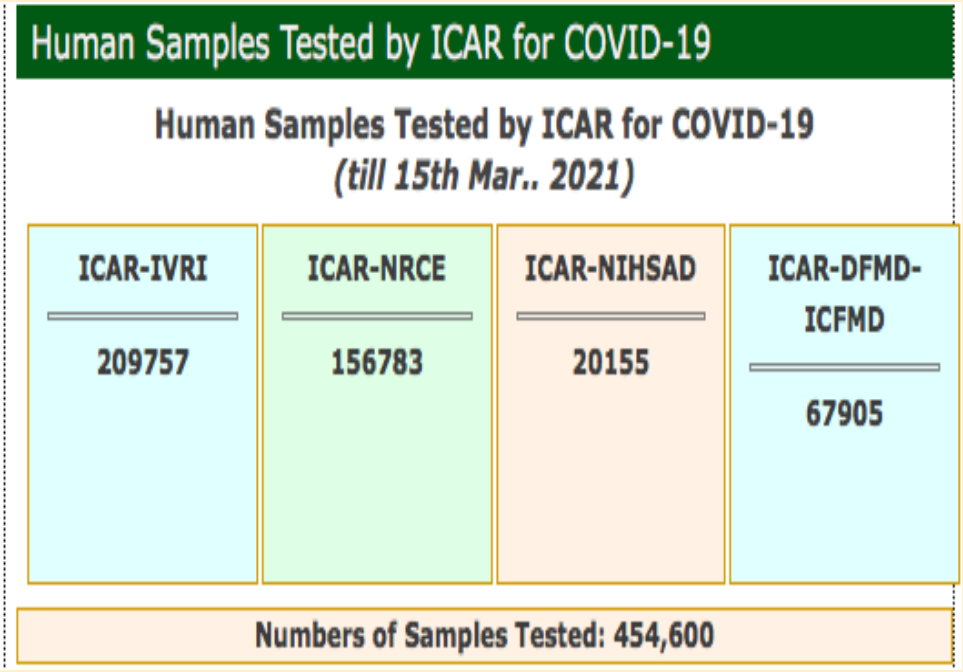
(development of digital/smart classroom, virtual reality facility, digital library system, other digital education and administrative infrastructure etc.)

2. Digital initiatives:

(organizing trainings through online, conducting online examinations, administering attendance, developing of web applications, e-learning modules etc.

S.N	Category of the collateral	Digital initiative	Practice before introduction of the initiative	Practice after introduction of the initiative
1	Delivered lecture by Dr. Rajesh Tandon, Associate Professor, Mississippi Medical Center, USA	Online lecture on "Studying the neutralizing antibody response to SARS-CoV-2 and screening of virus entry inhibitors" on Sep 2nd 2020 at 5:30. PM (IST)	COVID19 testing and RNA isolation	One extramural project funded by DBT was received at ICAR-IVRI Izatnagar on COVID19 at Joint Directorate CADRAD.
2	Delivered lecture by Dr Rohit K Jangra, Research Assistant Professor, Albert Einstein College of	online platform on "Neutralizing the threat of COVID-19" on 10th September	COVID19 testing and RNA isolation	

	Medicine, Bronx NY,USA	2020 at 4.00 PM		
3	Brochure	1.आरोग्य सेतु ऐप कोरोना वायरस के लिए कैसे उपयोग करें.	Application and utility of App	Registration and vaccination against COVID19 was done at IVRI



A fully dedicated team Scientists were deployed for COVID-19 testing during concurrent waves of COVID-19 pandemic. The CAAST-ACLH faculties contributed significantly at ICAR-IVRI, Izatnagar campuses as well as ICAR-IVRI, Mukteshwar campuses for timely diagnosis and sharing the test results in collaboration of local administration. The IVRI, Izatnagar was one of the nodal centres at Uttar Pradesh for COVID-19 testing. The all RT-PCR machines of the Institute were placed at CADRAD for continuous 24X7 processing of collected COVID-19 samples from Bareilly and adjoining districts. Likewise, the IVRI Mukteshwar centre tested samples of Nainital district. All the samples were processed/deconvoluted in BSL-3 facility of Institute. During the period 2.22 lakhs COVID-19 samples were processed by Institute at both campuses.

Other than RT-PCR testing the Rapid Antigen testing camps were organised at ICAR-Indian Veterinary Research Institute during the second wave of COVID-19. Also at the Human Hospital of Institute the COVID-19 vaccination was facilitated.

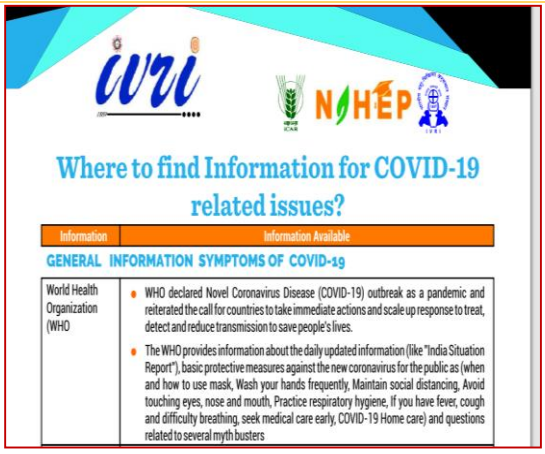
Publications dealing with advisories on COVID-19 for farmers and Public

Leaflets

1. Tiwari, Rupasi, Tiwari, A.K., Dutt, Triveni, (2020) *Bar Bar Puche Jane Wale Prashn COVID-19 Paltu, Pashu aur Hum* CAAST-ACLH project **(**under NAHEP, ICAR), ICAR-IVRI, Izatnagar.

2. Tiwari, Rupasi, Dutt, Triveni, Tiwari, A.K., (2020) *Arogya Setu app Kaise Upyog Kare aur Pata Kare ki Kya Apko Corona Vius Ke Lakshan Hai ya nahi* CAAST-ACLH project **(**under NAHEP, ICAR), ICAR-IVRI, Izatnagar.

3. Tiwari, Rupasi, Dutt, Triveni, Tiwari, A.K., (2020) *Where to find Information for COVID-19 related issues?* CAAST-ACLH project **(**under NAHEP, ICAR), ICAR-IVRI, Izatnagar.



Booklet

Tiwari, Rupasi, Kumar, Bablu, Tiwari, A.K., Dutt, Triveni, (2020) *Corona Virus Rog (COVID-19) Mithak aur Tathya* CAAST-ACLH project (under NAHEP, ICAR), ICAR-IVRI, Izatnagar

1.4. Collaborations with industry and other HEIs for bringing relevancy

1.5. Please provide the details on relevant collaboration with industry for bringing relevancy and improving research effectiveness in the AU in one-two paragraph.

Collaborations	*Activity/achievement/purpose*	*Remarks/Photographs MoU date*
MJP Rohilkhand University, Bareilly	Capacity building of Faculties and students	23.07.2018
Sri Venkateswara Veterinary University, Tirupati (AP)	Capacity building of Faculties and students	19.09.2018
Acharya Narendra Dev University of Agriculture & Technology, Faizabad	Capacity building of Faculties and students	17.02.2020
RLB-Central Agricultural University, Jhansi	Capacity building of Faculties and students	28.04.2020
Maharana Pratap University of Agriculture & Technology, Udaipur (Raj)	Capacity building of Faculties and students	14.12.2020
Govind Ballabh Pant of Agricultural Sciences and Technology, Pantnagar	Capacity building of Faculties and students	20.01.2021
Sardar Vallabhbhai Patel University of Agriculture & Technology ,Meerut, Uttar Pradesh	Capacity building of Faculties and students	07.08.2021

ICAR-Indian Institute of Agricultural Biotechnology Garhkhatanga, Ranchi-, Jharkhand,	Capacity building of Faculties and students	31.3.2022.
All India Institute of Hygiene & Public Health, Kolkata	Capacity building of Faculties and students	11.04.2022
Royal Veterinary Corp, Centre and College Meerut	Capacity building of Faculties and students	27.09.2022

During MoU with Maharana Pratap University of Agriculture & Technology, Udaipur (Raj)

2. Achievements made through CAAST under NAHEP

2.1. Output-outcome monitoring

S. N.	Particulars	Apr'2018 to Mar'2023	
		Target	Achievement
1.	% increase in number of technologies commercialized	NA	NA
2.	% increase in faculty research effectiveness		20
3.	Number of direct beneficiaries of the project	-	125
4.	Number of female beneficiaries	-	80
5.	% increase in JRF / SRF / ARS		32.00
6.	% increase in number of students who were admitted in foreign universities		NA
7.	% increase in PG student placements	-	58
8.	Number of industry- sponsored projects and positions in cutting-edge areas of agri-science		NIL
9.	Number of faculty training programmes (national) undertaken by AU		195
10.	Number of faculty training programmes (international) undertaken by AU		22
11.	Number of student training programmes (national) undertaken by AU		6601
12.	Number of student training programmes (international) undertaken by AU		49

Observation
<<Please provide the explanation on the progress made against the output-outcome monitoring indicator and highlight the key initiatives which attributed to the overall outcome/potential impact of the project-Maximum 2-3 paragraphs>>

2.2. Knowledge Management Collaterals

I. Knowledge Collaterals	Apr'2018 to Dec'2023
1. Publications	16 leaflet, 01 Memoir, 02 Manual, 02 Status paper, 03 Technical Bulletin and 06 booklet
2. Research Articles	100+
3. Annual Reports	05
4. Books	07
5. Success Stories	Mobile app and educational video + CAAST at a glance
6. Newsletter	NIL
7. Magazines	NIL
8. Blogs	NIL
	Annexure II

II. Mobile and Web Applications	Apr'2018 to Dec'2023
1. Mobile Applications Developed	16
2. Web Applications Developed	02
	Annexure-III

III. Number of IPR (Intellectual Property Rights) Registered/Obtained	Apr'2018 to Dec'2023
1. Copyrights	-
2. Patents	4
3. Others	-

IV. Dissemination and Outreach	Apr'2018 to Dec'2023
1. No. of Posts on Social Media	NA
2. No. of Posts on Newspaper	19
3. No. of Posts on Magazines	NIL
4. No. of Unique Promotional or Outreach Collaterals	NA
	Annexure IV

2.3. Capacity building programs to improve the research effectiveness

1. International trainings for students and faculties

Subject areas	*Host institutes, period of training*	*Output of the training*
Students		
49	*Three month*	New skills & knowledge gained: Acquiring knowledge
Faculty		
22	*One week, one month and three month*	up gradation skill and entrepreneurship among faculty in the livestock health field through international training/visit
		Annexure-V

2. National trainings for students and faculties

Subject areas	*Period of training, total beneficiaries*	*Output of the training*
Students		
See Annexure-VI	*See Annexure-VI*	*See Annexure-VI*
Faculty		
See Annexure-VI	*See Annexure-VI*	*See Annexure-VI*

2.4. Input and activity monitoring

	Capital	Revenue
Total funds sanctioned during 2018-2023 by PIU (INR Lakhs)	70540,000	129310000
Total funds received till March 31, 2023 (Cumulative) (INR Lakhs)	70540,000	129310000
Total expenditure up to March 31, 2023 (INR Lakhs)	27,76,4464	128,416989

Input / Activity indicator	Sub- head / category	Apr'2018 to Dec'2023 Expenditure / input in INR lakhs		Activity elaboration
		Utilization	Planned	
Goods and equipment	Equipment, Plant & Machinery	-	-	-
	Office equipment	-	-	-
	Laboratory equipment	27,279,618		
	Furniture & fixtures	-	-	
	Computers and Peripherals	484846		
	Books and Journals	-	-	
Civil works	Minor repair and renovation work	-	-	
Human capacity building	National level training	-	-	
	International level training	**11841541**		
	Short visit/ seminars	-	-	
	Meetings and workshops	**236677**		
Consultancy	National level consultancies	-	-	
Recurrent cost / Miscellaneous	Travel	**802000**		
	Contractual services	**25574007**		
	Operational costs	**87946764**		
	Institutional charges	**2016000**		
Total				

Observation

<<Please provide the explanation on the progress made against the input and activity monitoring parameters>>

2.5. NAHEP outreach and other unique initiatives undertaken

Please provide the brief progress undertaken against the different categories placed below along with the suitable photographs/links/documents etc. Please note that only significant activities/initiatives are to be incorporated in this document.

a) Case studies/success stories developed under NAHEP
(establishment of own enterprise by beneficiary student/high-impact research carried-out by AU under NAHEP/enhanced students learning outcomes due to establishment of modern facilities under NAHEP etc.)

Illustrative: Success story

Illustrative: Success story-I

Innovations:

Design and development of devices for the management of important reproductive disorders

The four designs have been developed viz., Cyst ablation device, Cyst aspiration cum ablation device, Herd animal catcher and Internal genital injection device for efficient and economical management of reproductive disorders in bovine. These designs have been submitted for registration at the Indian Patent Office for Design with the following details

1. **Ovarian cyst aspiration cum ablation device (Design Application No. 333779-001):**

Features of the technology: It is portable and handy device for the treatment of cystic ovarian disease in cattle and buffalo. The main USP of this equipment is that we can aspirate the cystic fluid also which will be of immense use in the research and further development of diagnostics

2. **Herd Animal Catcher (Design Application No. 333780-001):**

Features of the technology: It is light weight, rod shape device and working on the principle of loop drop and developed for catching a particular animal in the herd**.**

3. **Internal Genital Injection Device (Design Application No. 333779-002)**

Features of the technology: Device developed for the treatment of bull accessory sex gland ailments and also useful in chemical sterilization of female cow. It could also be used for intra cervical injection in the cases of incomplete cervical dilation (ICD) in bovine.

4. **Portable Downer Bovine Stand (Design Application No. 354808-001 dt 06.12.2021)**

Features of the technology: User-friendly stand for effective management of downer bovine on account of peri-parturient injuries and subsequent decubitus ulcers. Also helpful in the cases Hypocalcaemia, Fractures, Muscles & Nerve injuries & Debility

Side 1 view

Side 2 view

b) Case studies/success stories developed under NAHEP

(establishment of own enterprise by beneficiary student/high-impact research carried-out by AU under NAHEP/enhanced students learning outcomes due to establishment of modern facilities under NAHEP etc.)

Illustrative: Success story-II

One PhD student Dr Arnav Mehrotra got Postdoc placement in the same laboratory where he had completed his 03 month Overseas training under agesis of NAHEP project Institute name : ETH Zurich Switzerland	One MVSc student Dr Kappari Laharika got PhD in the same laboratory where she had completed his 03 month Overseas training under agesis of NAHEP project Institute name : Cellular biology lab, University of Georgia, US.
	 

Illustrative: Success story-III

Publication/Resource materials/Books published under CAAST-ACLH:

Research Papers Total 42 research papers published with cumulative impact factor 58.79


frontiers in Genetics

BRIEF RESEARCH REPORT
published: 18 December 2020
doi: 10.3389/fgene.2020.589496

Signatures of Selection in Composite Vrindavani Cattle of India

Akansha Singh[1], Arnav Mehrotra[1], Cedric Gondro[2], Andrea Renata da Silva Romero[3], Ashwni Kumar Pandey[1], A. Karthikeyan[1], Aamir Bashir[1], B. P. Mishra[4], Triveni Dutt[5] and Amit Kumar[1]*


frontiers in Microbiology

ORIGINAL RESEARCH
published: 18 September 2020
doi: 10.3389/fmicb.2020.579917

OPEN ACCESS

Edited by:
Elisabeth Grohmann,
Beuth Hochschule für Technik Berlin, Germany

Exploiting Lactoferricin (17–30) as a Potential Antimicrobial and Antibiofilm Candidate Against Multi-Drug-Resistant Enteroaggregative *Escherichia coli*

Jess Vergis[1†], Satyaveer Singh Malik[1†], Richa Pathak[1], Manesh Kumar[1], Sunitha Ramanjaneya[1], Nitin Vasantrao Kurkure[2], Sukhadeo Baliram Barbuddhe[3] and Deepak Bhiwa Rawool[1,2]*

c) Knowledge management and outreach initiatives (development of collaterals, newsletter, social media outreach activities, creation of website, experiential learning workshop, exposure visits, (provide the details of the documents/articles/reports/modules/social media outreach/ website creation/experiential learning workshop/exposure visits etc. developed under NAHEP along with the suitable photograph of the cover-page and web-link (if available) – brief summary, cover page,

S.N	Category of the collateral	Brief summary	Snapshot/cover page	Weblink (if any)
1	Mobile App	See Annexure-III		
2	Educational Videos	See Annexure-III		
3	Web Application	See Annexure-III		
4				
..				

d) Unique initiatives undertaken

1. Digital infrastructure
(development of digital/smart classroom, virtual reality facility, digital library system, other digital education and administrative infrastructure, Agri Diksha, AMS implementation etc.)

Digital class room established
More than 50 lectures recorded on AgriDiksha Porta

2. Digital initiatives:
(organizing trainings through online, conducting online examinations, administering attendance, developing of web applications, e-learning modules etc.

S.N	Category of the collateral	Digital initiative	Practice before introduction of the initiative	Practice after introduction of the initiative
1	Delivered lecture by Dr. Rajesh Tandon, Associate Professor, Mississippi Medical Center, USA	Online lecture on "Studying the neutralizing antibody response to SARS-CoV-2 and screening of virus entry inhibitors" on Sep 2nd 2020 at 5:30. PM (IST)	COVID19 testing and RNA isolation	One extramural project funded by DBT was received at ICAR-IVRI Izatnagar on COVID19 at Joint Directorate CADRAD.
2	Delivered lecture by Dr Rohit K Jangra, Research Assistant Professor, Albert Einstein College of Medicine, Bronx NY,USA	online platform on "Neutralizing the threat of COVID-19" on 10th September 2020 at 4.00 PM	COVID19 testing and RNA isolation	

3	Brochure	1.आरोग्य सेतु ऐप कोरोना वायरस के लिए कैसे उपयोग करें.	Application and utility of App	Registration and vaccination against COVID19 was done at IVRI
4				
..				

Please provide up to 15 photographs with high quality (minimum 1-2MB) and label with suitable caption. Attach the photographs separately in the mail.

3. Potential impact of the intervention:

Observation

<<Please provide the explanation on potential impact of the intervention in short and long term while illustrating the key initiative/activity. Also, relate how input turned into output→outcome→impact in brief sentence or graphical way. Consider one or two examples/cases etc, >>

1. **International training for PG students has significantly improved the better placement of students. Our overseas trained students are getting very good success in competitive interviews at SAUs for assistant professor job.**
2. **The Big data computational laboratory has significantly improved the genomics data handling capacity of faculties and students.**
3. **The In vivo imaging system installed is a unique facility for investigating and monitoring drug delivery mechanism in mice model.**
4. **The digital droplet PCR has facilitated the study of exact copy number variation in genomics study.**
5. **The ultracentrifuge with Rotors is facilitating the virological research**

4. Challenges faced and lessons learned while implementing the project at AU:

Challenges	
1	The COVID-19 Pandemic
2	The price hike for Transmission electron microscope
3	For some of the equipment we could not receive the three quotations
4	Long procedure for inviting Adjunct Professors from overseas countries
Lessons learned	
1	**Timely procurement shall be completed for avoiding last minutes delay**
2	
3	
4	
5	

5. Sustainability Plan

5.1. Sustainability plan of the AU

- *Does the AU have any sustainability plan for to make AU future ready and globally recognized?(Yes/No)*
- *If yes, details thereof?*

1	Implementation of NEP 2020
2	
3	
4	
5	

5.2. Sustainability plan for improving internal revenue generation through facilities and infrastructure created under the project

1	
2	
3	
4	
5	

6. Contribution of each individual in project

6.1. Name of Vice Chancellors(s) during project duration and contributions each PI, Co-PI and team along with their photographs

Dr R K Singh Director cum Vice chancellor of ICAR-Indian Veterinary Research Institute Izatnagar. Till 2020. From 2020 to till date Dr. Triveni Dutt, Director cum Vice chancellor of ICAR-Indian Veterinary Research Institute Izatnagar

Nodal Officer

S. No.	Name and Designation	Area of specialization	Contact address
1	Dr Triveni Dutt, Director (A) & Vice Chancellor	Animal Breeding, Livestock Production and Management and ICT	9412510980 triveniduttivri@gmail.com

Principal Investigator

S. No.	Name and Designation	Area of specialization	Contact address
1	Dr. A K Tiwari PS & Head, Biological Standardization & Principal Investigator	Veterinary Microbiology & Biotechnology	aktiwari71d@gmail.com aktiwari63@yahoo.com
2	Dr Amit Kumar Senior Scientist	GWAS and QTL data analysis	09219614456 vetamitchandan07@gmail.com

Core Faculty of CAAST-ACLH project

S. No.	Name and Designation	Major contribution/output	Contact address
1.	Dr V. Bhanuprakash Joint Director, IVRI Campus, Bengaluru	Vaccine/diagnostics	09449665398 bhanu6467@gmail.com
2.	Dr Praveen Singh, Principal Scientist & I/c, CIF Bioengineering & Biophysics Section	Nanotechnology	09319928418 psingh67@yahoo.com
3.	Dr Sanjay Kumar Principal Scientist & Head, Livestock Econ. & Statistics	Health economics	9412565510 skp67@email.com sanjupandey01@gmail.com
4.	Dr B.R. Singh Principal Scientist & Head, Epidemiology Division	Epidemiology of AMR and vaccine development	08449033222 brs1762@gmail.com brs1762@ivri.res.in
5.	Dr A.K. Pattanaik Principal Scientist	Clinical Nutrition	9411087753 akpattanaik1@gmail.com
6.	Dr Bina Mishra Principal Scientist	Veterinary Microbiology & Biotechnology	9457468007 binachauahanmishra-@hotmail.com
7.	Dr Rupasi Tiwari Principal Scientist I/C ATIC	Development of ICT tools	9411917058 rtiwarirupasi@gmail.com

Associate Faculty

S. No.	Name and Designation	Major contribution/outpu	Contact address

		t	
1.	Dr Mahesh Chander Principal Scientist, Head & Joint Director (EE) Act.	Diffusion & Adoption	9411087833 drmahesh.chander@gmail.com
2.	Dr Amarpal Principal Scientist & Head	Veterinary Surgery and Radiology	9012339489 dramarpal@gmail.com
3.	Dr A.K. Verma Principal Scientist & Head	Feed Technology	9412318322 hdanivri@gmail.com
4.	Dr A.K. Tewari Principal Scientist	Veterinary Protozoology	9411221634 tewarianup@gmail.com
5.	Dr Sadhan Bag Principal Scientist	Stem cell Biology, Nanotechnology	9927400416 bag658@gmail.com
6.	Dr B.P. Sreenivasa Principal Scientist	Virology	9901480275 bpsrini@gmail.com
7.	Dr A. Sanyal Principal Scientist	Virology	8762405232 aniket.sanyal@gmail.com
8.	Dr H.J. Dechamma Principal Scientist	Gene Cloning, Expression, Vaccine nanoparticle delivery	9480315280 dechammahj@yahoo.com
9.	Dr Rajat Garg Principal Scientist	Veterinary Protozoology	9412439281 rajatgarg_2000@yahoo.com
10.	Dr B.H.M. Patel Principal Scientist	Livestock Management	9412120824 mpatellpm@gmail.com
11.	Dr Ashwni Kumar Pandey Principal Scientist	GBS, marker identification and association studies	9416295734 ashwni.pandey@gmail.com
12.	Dr S.K. Singh Principal Scientist	Female Reproduction	9410405634 singhsanjayk69@gmail.com singhsk2032@rediffmail.com
13.	Dr B.C. Saravanan Senior Scientist	Molecular diagnosis and characterization of haemoprotozoa	9759964772 drbcsaravanan@gmail.com
14.	Dr S. Bandyopadhyay Senior Scientist	Management and therapeutics of diarrhoea	09434082634 sbandyo@ivri.res.in samiranvet@gmail.com
15.	Dr C.L. Patel Scientist	DIVA-capable vaccine, Reverse genetic system	9760821407 patelcl@gmail.com
16.	Dr Babloo Kumar Scientist	Brucella diagnostics	babbacteriol@gmail.com
17.	Dr Pallab Chaudhury Principal Scientist	Vaccine & Diagnostics	9897806310 pallab.chaudhuri@gmail.com
18.	Dr Amit Kumar Scientist	Vaccine & Diagnostics	9411032085 Amitvet87@gmail.com
19.	Dr G.K. Gaur Principal Scientist	Animal breeding	9457366190 gyanendrakg@gmail.com
20.	Dr Mukesh Singh Principal Scientist	Livestock farm mechanization &behaviour	9412048708 drmsingh9@gmail.com
21.	Dr HimaniDhanze Scientist	Zoonotic diseases	7975951459 hdhanze@yahoo.co.in
22.	Dr Rohit Kumar Scientist	Veterinary Surgery and Radiology	7520512588 drrohits.singh@gmail.com
23.	Dr S.E. Jadhav	Clinical Nutrition and	7599287128

	Senior Scientist	Mineral Nutrition	sejadhav1@gmail.com
24.	Dr Brijesh Kumar	Animal Reproduction	drbrijeshvet02@gmail.com 9005711815
25.	Dr Chandrasekhar	Vaccine & Diagnostics	8449489225 schand_vet@yahoo.co.in
26.	Dr. Deepika Bisth	Vaccine & Diagnostics	7055939565 9410906579 dpbisht4n@gmail.com
27.	Dr VikramadityaUpmanyu	Vaccine & Diagnostics	9045666047 vupmanyu17@rediffmail.com
28.	Dr Mithilesh K Singh	Immunology	8218625971 mithi10vet@ivri.res.in drmithileshsingh@yahoo.com
29.	Dr R P Tamilselvan	Vaccine and Diagnostics	8023411218 tamil.selvan@icar.gov.in
30.	Dr S V S Mallick	AMR	09837473093 svsmalik@gmail.com
31.	Dr. Ujjwal Kumar De	Management of Therapeutics of Mastitis	09411473760 ujjwalde@gmail.com

Detail of Senior Research Fellow worked/Working in different thematic area under CAAST-ACLH projects

SN	Name of SRF	Worked under thematic area	Under supervision of PI & Co-PI	Date of Joining	Working up to
01.	Mr. Vikram Pratap	Isolation of mesenchymal stem cells from bovine umbilical cord and subsequent reprogramming into induced pluripotent stem cells (iPSCs) in order to generate an iPSC repository.	Dr. Sadhan Bag	14.01.2019	31.07.2019
02.	Mr. Yashpal Singh	To augment knowledge generation of students and faculty in the advanced areas of vaccinology, diagnostics, immune-nutrition and genomics for the improvement of livestock health	Dr. Pallab Chaudhary	10.01.2019	16.09.2019
03.	Ms. Lalita	Research work related to novel diagnostic and therapeutic aspects of Brucellosis	Dr. Bina Mishra	06.02.2019	17.08.2019
		Development of image database for labeling of diseased and normal animals in NIBLD mobile application (App)	Dr Triveni Dutt	01.01.2021	23.09.2022
04.	Dr. Anand Kumar	Development of recombinant baculovirus based PCV-2 vaccine candidate	Dr. V Upmanyu	16.01.2019	27.08.2019

05.	Dr. Asmita Singh	Worked on Immunonutrition / Clinical nutrition	Dr. A K Pattanaik	01.05.2019	31.03.2021
06.	Dr. Dhan Pal	Working on Genome wide Association Study /QTL Analysis	Dr. Amit Kumar	01.05.2019	31.03.2023
07.	Dr. Shikha Saxena	Worked on the genome wide expression profile of CSFV infected cross bred and indigenous breed macrophage of swine was done by transcriptome analysis.	Dr. Amit Kumar	03.05.2019	14.07.2021
08.	Mrs. Nagasupreetha S R	Working on companion diagnostics for foot-and-mouth disease	Dr. V Bhanuprakash	01.06.2019	31.03.2022
09.	Mrs. Siridevi G. B.	Worked on development of negative marker vaccine	Dr. Dechamma HJ	01.06.2019	24.03.2020
10.	Ms. Harshita Patangia	Working in the lab included optimization and performing an ELISA detecting antibodies against non-structural 3AB proteins of FMDV using chemiluminescence	Dr.B.P.Sreeniva sa	01.06.2019	31.03.2022
11.	Dr. Om Shankar	Working in M & E cell to prepare Annual progress report, half yearly report, Maintain data of students who were on overseas training and office related work.	Dr. Amit Kumar	27.08.2019	Till date
12.	Ms. Ameya Santhosh	Working on development of recombinant baculovirus based PCV-2 vaccine candidate	Dr. A K Tiwari	16.09.209	08.05.2020
13.	Dr. Navneet Kaur	worked in the field of ICT	Dr Rupasi Tiwari	23.12.2019	25.09.2020
14.	Dr. Kumari Priyanka	Worked on development of Marker vaccine for PPR.	Dr. M A Ramakrishnan	19.10.2019	30.11.2019
15.	Mr. Pushpendra Kumar	Working on Development of Penside diagnostics of *Brucella*	Dr. Bablu Kumar	04.01.2020	31.03.2023
16.	Mr. Yogendra Pal	Working on separation of smooth LPS of Brucella abortus strain and estimating the concentration using phenol method	Dr Praveen Singh	24.12.2020	31.03.2023
17.	Dr. Neelam Tomar	Working on development of recombinant baculovirus based PCV-2 vaccine candidate	Dr. V Upmanyu	24.12.2020	30.09.2022
18.	Mr. Kapil Dev	Working on development of	Dr. Bina Mishra	24.12.2020	03.05.2022

		Sheeppox and PPR (F&H) recombinant virus			
19.	Ms. Richa Gupta	Worked in the field of ICT	Dr Rupasi Tiwari	24.12.2020	31.05.2021
20.	Dr. Mageswary R.	Working on the development of marker vaccine and DIVA assays for PPR	Dr S Chandra Sekar	01.02.2021	Till date
21.	Mrs. Indu Shekhawat	Working on characterization of FMDV Asia$^{\Delta 3AB1}$ virus rescued from infectious cDNA clone in BHK-21cells by, negative strand PCR, sandwich ELISA serotyping, imuno-blotting of virus antigens and virus titration and plaque morphology	Dr. Dechamma HJ	18.01.2021	31.3.2022
22.	Ms. Aleema Ansari	Working on vaccine induces immune response against PPR.	Dr Sonalika Mahajan	27.09.2021	31.3.2022
23.	Dr. Ashutosh Fular	Working in the field of ICT	Dr Rupasi Tiwari	27.09.2021	Till date
24.	Dr. Rashmi Gangwar	Working on fabrication of Gold Electrochemical Sensor Surface for the Detection of *Brucella*	Dr. Praveen Singh	01.10.2021	31.3.2022
25.	Dr. Aakanksha Tiwari	Working on the field of ICT	Dr Rupasi Tiwari	04.10.2021	06.04.2022
26	Ms. Shivani Khanna	Working on Genome wide Association Study /QTL Analysis	Dr Amit Kumar	01.10.2021	20.02.2023

6.2. Details of visits of PIU-NAHEP officials at your AU along with photographs (provide list)

Dr PK Gosh National Coordinator CAAST and Sh Prabahat Kumar, PS, NAHEP and Sh Dilip Roy undersecretary NAHEP, from PIU NAHEP ICAR on 16th March 2019

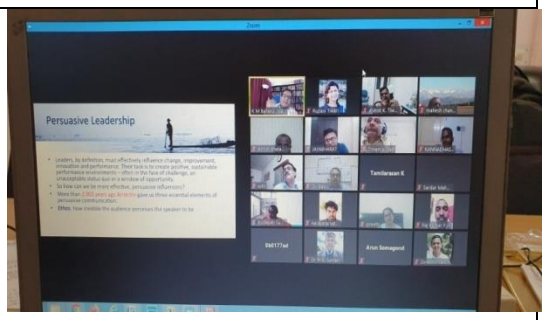
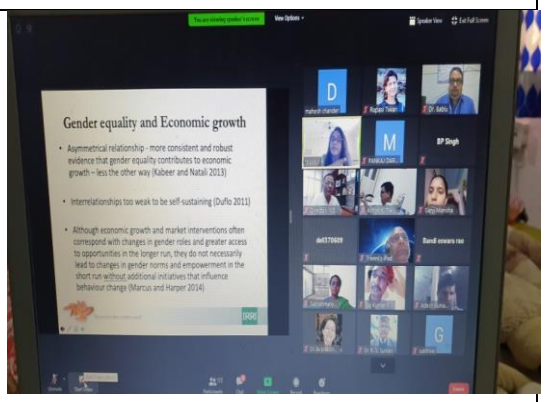
Mr. Robin Audy, an official from the World Bank along with 2 other officials of Monitoring & Evaluation team namely Mr. Nilesh Deshmukh and Mr. Arvind Jha on 24th Nov. 2022

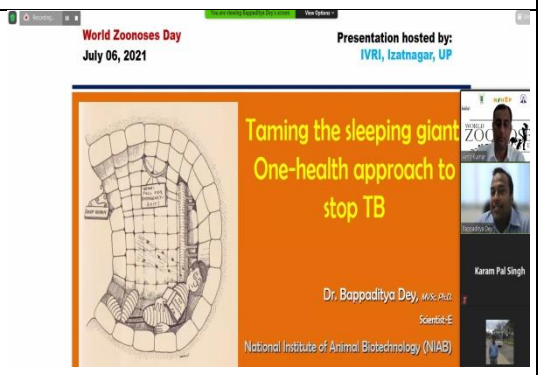
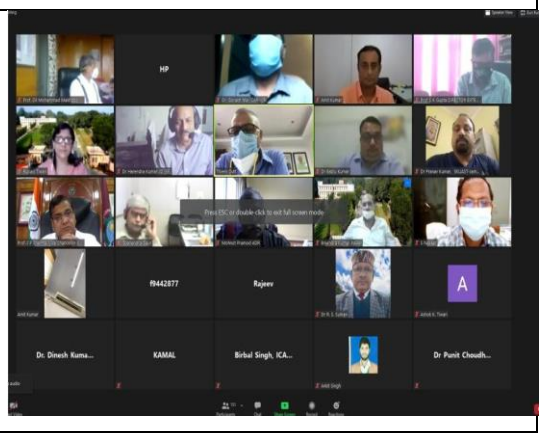
Annexure I

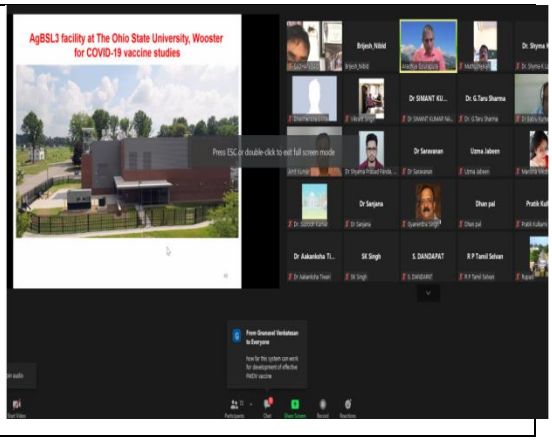
4. Distinguished lecture series/ special lectures required:

S. N	Speakers	Topic and Date	Photo
1.	Dr. Ritu Raj, CDRI, Lucknow	Advance and challenges in recent drug discovery approaches, 23.03.2019, total Participants-**75**	
2.	Dr. Sachin Kumar, Guwahati	Avian Paramyxo virus: Friend or foe?, on 23.03.2019**,** total Participants-**75**	
3.	Dr. Narayanchandra Mishra, IIT Roorkie	Nanotechnology based biotrimetric seaffolds for tissue engineering, on 26.03.19, total participants-**58**	
4.	Dr. Amit Goyal, NIAB, Hyderabad	Targeted drug delivery and nano medicines on 27.03.2019, total participants-**84**.	
5.	Dr. H.B.D.Rao, NIAB, Hyderabad	DNA damage response and repair pathway on 27.03.2019, total participants-**84**	
6.	Dr. Anil Rai, IASRI, N.Delhi	ashoka-A super computational facility for remore client high level language in bioinformatics, on 23-4-2019, total participants-**64**	
7.	Dr. N. Ravi Sudarshan	Crisper mediated mutagenesis, on 15-6-2019, total participants-**79**	

8.	Dr Rajeev Kaul Assistant Professor, University of Delhi South campus	Molecular biology of virus mediated cancers: Pathogenesis and Diagnosis, 15.07.2019, total participants-**34**	
9.	Dr Shivendra Kashyap, Professor & Head/ Jt. Director Deptt. of Agril. Communication G.B.Pant University of Agriculture & Technology, Pantnagar 263145, Uttarakhand	Facilitative teaching skills to enhance the learning , 25.09.2019, total participants-**67**	
10.	Dr. Prabha Chandrasekharan	Transdiscip;inary approaches in Health and Research and the challenges,06-11-19, total participants-**70**	
11.	Dr Shahnawaz Imam, DVM,Ph.D Assistant Professor, Department of Medicine; Center for Diabetes and Endocrine research, College of Medicine and Life sciences, University of Toledo,Ohio,U	Immunoediting in Thyroid Cancer and Thyroid Autoimmunity On 04-01-2020, total participants-**41**	

	SA.		
12.	Dr K M Baharul Islam, Dean at Indian Institute of Management Kashipur	Online lecture on Persuasive Leadership and Team Building Strategies on 06th May 2020 at 3:00PM, total participants-**117**	
13.	Dr Ranjitha Puskur, Research Lead - Livelihoods, Gender and Nutrition East & Southern Africa Office Nairobi, Kenya International Rice Research Institute	Online lecture on "Agricultural Research for Development: Imperative for effective gender integration"on 12th May 2020 at 3.00 PM, total participants-**186**	
14.	Dr. Ritesh Tandon, Associate Professor, Mississippi Medical Center, USA	Online lecture on "Studying the neutralizing antibody response to SARS-CoV-2 and screening of virus entry inhibitors" on Sep 2nd 2020 at 5:30. PM (IST), total participants-**174**	
15.	Dr Rohit K Jangra, Research Assistant Professor, Albert Einstein College of Medicine, Bronx NY,USA	online platform on "Neutralizing the threat of COVID-19" on 10th September 2020 at 4.00 PM, total participants-**167**	

16.	Mrs. Radha Shankarnarayanan, CEO Smart Series, Bengaluru	online platform on "Goal setting and achieving"on Sep 18 th , 2020 at 03:00 PM, total participants-**122**	
17.	Dr Cedric Gondro Professor Dept. of Animal Science, Michigan State University, USA	online platform on "Feature Selection for Genomic Prediction" on Nov 3rd 2020 at 9:30 AM (IST), total participants-**352**	
18.	Dr Bappaditya Dey , Scientist E National Institute of Biotechnology (NIAB) organized by CAAST-ACLH Project	online platform on "Taming the Sleeping Giant: One health approach to stop TB " World Zoonosis Day on 06 July, 2021, total participants-**248**	
19.	Dr J.P.Sharma, **Vice-Chancellor of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu, J&K**.	lecture on *"Agripreneurship for Atamnirbhar Bharat"* on 4th of August, 2021 at 11:00 AM on virtual platform, total participants-**332**	

20.	Dr. Renukaradhya J. Gourapura, Center for Food Animal Health Department of Animal Sciences The Ohio State University,1680 Madison Avenue Wooster, OH	Distinguished Lecture on "Nanovaccine and Mucosal Immunity" on October 26th, 2021 at 02.00 PM (IST) , total participants-**114**	

Annexure-II

A. List of publication (Book/ Booklets/ Manuals/ Annual Report) under CAAST-ACLH project ICAR-IVRI, Izatnagar to Dec 2023

S.N	Title of publication	Publication	Authors	Pge No	Division	Year
1.	A manual for Tutorial Course on Spoken & Written English.	Book	Shashi Rani.	54	Deemed university	2019
2.	Leaflet on Paltu Pashuon ka tikakaran.	Leaflet	Tiwari, A.K., Tiwari, Rupasi, Dutt, Triveni, Kaur, Navneet, & Dey, U.K.	2	Medicine	2020
3.	Leaflet on Kutton Evam Billiyon ka tikakaran.	Leaflet	Dutt, Triveni, Tiwari, Rupasi, Tiwari, A.K., Dey, U.K. & Kaur, Navneet	2	Medicine	2020
4.	Leaflet on Murgio ka tikakaran.	Leaflet	Dutt, Triveni, Yadav, A. S., Tiwari, Rupasi, Tiwari, A.K. & Kaur, Navneet	2	CARI	2020
5.	Leaflet on Antra Vishaktata (Entrotoxemia).	Leaflet	Kumar, Akhilesh, Dutt, Triveni, Tiwari, Rupasi, Tiwari, A. K. & Kaur, Navneet	2	Medicine	2020
6.	Leaflet on Neel Jivha (Blue tounge).	Leaflet	Tiwari, A. K., Dutt, Triveni, Tiwari, Rupasi, & Abhishek	2	Bacteriology & Mycology	2020
7.	Leaflet on Brucellosis (Sankramak Garvpat/Sansargik Garvpat).	Leaflet	Kumar, Bablu, Dutt, Triveni, Tiwari, A. K. & Tiwari, Rupasi	2	Biological Production	2020
8.	Leaflet on Chechak Rog (Pox).	Leaflet	Tiwari, A. K., Dutt, Triveni, Tiwari, Rupasi & Kumar, Akhilesh.	2	Medicine	2020
9.	Leaflet on Galghotu Ya Ghurka Rog.	Leaflet	Dutt, Triveni, Tiwari, A. K., Tiwari, Rupasi, & Kumar, Bablu	2	Biological Production	2020
10.	Leaflet on Bakri Plague (P.P.R.).	Leaflet	Tiwari, A. K., Dutt, Triveni & Tiwari, Rupasi	2	Standardization Division	2020

11.	Leaflet on Langdi Rog (Black Quarter).	Leaflet	Tiwari, A.K., Dutt, Triveni, Tiwari, Rupasi, Kumar, Bablu, & Kaur, Navneet	2	Standardization Division	2020
12.	Leaflet on Khurpaka Muhpaka Rog .	Leaflet	Tiwari, A.K., Dutt, Triveni & Tiwari, Rupasi	2	Standardization Division	2020
13.	Leaflet on Shukar Jwar (Swine fever).	Leaflet	Tiwari, A. K., Dutt, Triveni, Tiwari, Rupasi & Abhishek	2	Bacteriology & Mycology	2020
14.	Leaflet on Pliha Rog (Anthrax).	Leaflet	Dutt, Triveni, Tiwari, A.K., Tiwari, Rupasi & Kumar Akhilesh	2	Medicine	2020
15.	Leaflet on Thanela Rog.	Leaflet	Dutt, Triveni, Kumar, Akhilesh, Tiwari, Rupasi, & Tiwari, A.K.	2	Medicine	2020
16.	Leaflet on Pashudhan Swasthya Evam Prabandhan Mein Sahayak Mobile App.	Leaflet	Tiwari, Rupasi, Dutt, Triveni, Tiwari, A. K. & Kaur, Navneet	2	Extension Education Division	2020
17.	Leaflet on Pashuon Mein Rakth Parjivi Se Hone Wale Rog.	Leaflet	Tiwari, A. K., Tiwari, Rupasi, Dutt, Triveni & Kaur, Navneet	2	Standardization Division	2020
18.	A booklet on Mobile Apps and Educational videos.	Book	Tiwari, R, Dutt, T, Tiwari, A.K. & Kaur Navneet.	58	Extension Education Division	2020
19.	A booklet on CAAST at A Glance.	Book	Tiwari, R, Dutt, T, Tiwari, A.K. & Kaur Navneet.	58	M & E Cell	2020
20.	A manual on Biosafety and Biosecurity in Animal Science Research and Development.	Manual	Dutt, T, Tiwari, A.K., Tiwari, R, Kumar, Kumar, Bablu & Singh, V.P.	58	Standardization Division	2020
21.	Memoir- Students Sandwich Programme at International Universities/Institutes.	Book	Tiwari, A K, Dutt, T, Tiwari, R & Kaur, Navneet.	44	M & E Cell	2020
22.	Leaflet on Bar Bar Puche Jane Wale Prashn COVID-19 Paltu, Pashu aur Hum.	Leaflet	Tiwari, Rupasi., Tiwari, A.K., Dutt, Triveni	2	Extension Education Division	2020
23.	Leaflet on Arogya Setu app Kaise Upyog Kare aur Pata Kare ki Kya Apko Corona Vius Ke Lakshan Hai ya nahi.	Leaflet	Tiwari, Rupasi., Dutt, Triveni., Tiwari, A.K	2	Extension Education Division	2020
24.	Leaflet on Where to find Information for COVID-19 related issues?.	Leaflet	Tiwari, Rupasi., Dutt, Triveni., Tiwari, A.K	2	Extension Education Division	2020
25.	A booklet on Corona	Bookle	Tiwari, Rupasi.,	08	Extension	2020

	Virus Rog (COVID-19) Mithak aur Tathya.	t	Kumar, Bablu., Tiwari, A.K., Dutt, Triveni.		Education Division	
26.	A book on Veterinary Bacteriology.	Book	Rawat M .Pp: 850	850	Standardization Division	2020
27.	A book on Haemorrhagic Septicemia.	Book	Rawat, M., Tiwari, A K., Dutt, T., Tiwari, R, .	102	Standardization Division	2020
28.	Annual Progress Report of CAAST-ACLH (2018-19).	Book	Kumar, B., Tiwari, R., Dutt, T., Tiwari, A K., (2020).	108	M & E Cell	2020
29.	Annual Progress Report of CAAST-ACLH (2019-20).	Book	Kumar, B., Tiwari, R., Dutt, T., Tiwari, A K., .	108	M & E Cell	2020
30.	Peste des petits ruminants (PPR): Current status and way forward.	Status paper	Rajak, K K., Singh, R P., Singh, R K., Tiwari, A K., Dutt, T., Tiwari, R, .	16	Biological Production	2020
31.	Food and mouth Disease (FMD) in India: Scenario, Diagnosis and Control, Status Paper/Policy Paper.	Status paper	Singh, R, K., Subramaiam, S., Mohapatra, J, K., Krishnaswamy, N., Basagoundanavar, S, H., Sanyal, A., Tiwari, R., Dutt, T., Tiwari, A.	16	ICAR-IVRI, Bangalore campus	**2020**
32.	A Color Atlas on Parasites of Veterinary Importance.	Book	Garg, R., Ram, H., Banerjee, P S., Sarvanan, B C., Ghosh, S., Chandra, D., Prasad, A., Sarkar, M., Tewari, A K., Samanta, S., Tiwari, R., Dutt, T., and Tiwari, A K.	214	Parasitology	**2020**
33.	A booklet on IVRI-Technology & Services.	Booklet	Dutt, T., Tiwari, R., Mishra, B., Tiwari, A K.	144	Extension Education Division	**2021**
34.	Booklet on IVRI-Prodhyogi kiyan evam sewayen.	Booklet	Dutt, T., Tiwari, R., Mishra, B., Tiwari, A K.	144	M & E Cell	**2021**
35.	Booklet on Pashuo Evam Pakshio Ke Mahatavpurn	Booklet	Dutt, T., Tiwari, R., Yadav, A S., Kumar,	228	M & E Cell	**2021**

	Rog Evam Tikakaran.		B., Tiwari, A K.			
36.	Annual Progress Report of CAAST-ACLH (20-21).	Book	Kumar, B., Tiwari, R., Dutt, T., Tiwari, A K.,	59	M & E Cell	**2022**
37.	A Book on IVRI-Pashudhan evam kukut utpadan main jaivsurakcha.	Book	Dutt, T., Tiwari, R., Chauhan, A., Yadav, A.S., Kuamr, A.	260	M & E Cell	**2022**
38.	A book on Biosecurity in livestock and poultry farm.	Book	Dutt, T., Tiwari, R., Chauhan, A., Yadav, A.S., Kuamr, A, Panda,P.	228	M & E Cell	**2022**
39.	Hkkjr esa i'kqvksa ds jksxksa dh jksdFkke ,oa fu;a=.k gsrq dkuwu	Booklet	Anuj Chauhan, Rupasi Tiwari, Pratikshya Panda, A S yadav, Amit Kumar and Triveni dutt.	8	M & E Cell	**2023**
40.	dqDdqV QkeZ esa çHkkoh jksx fu;a=.k gsrq çfrcafèkr vkokxeu O;oLFkk	Booklet	Pratikshya Panda, A S Yadav, Rupasi Tiwari, Anuj Chauhan, Amit Kumar and Triveni dutt.	8	M & E Cell	**2023**
41.	i"kq/ku ,oa if{k;ksa ds LokLF; ,oa jksx fu;a=.k gsrq egRoiw.kZ iz;ksx"kkyk,a] ;kstuk,a rFkk laxBu	Booklet	Rupasi Tiwari, Anuj Chauhan, Bablu Kumar, Pratikshya Panda, Ashutosh Fular, Amit Kumar and Triveni dutt.	26	M & E Cell	**2023**
42.	i'kq/ku o dqDdqV Qkeks± ij dhVuk'kdksa dk mfpr mi;ksx	Booklet	Rupasi Tiwari, Anuj Chauhan, Pratikshya Panda, A S Yadav, Amit Kumar and Triveni dutt.	8	M & E Cell	**2023**
43.	i'kq/ku o dqDdqV Qkeks± ij jksxksa ls lqj{kk lEcaf/kr iz"uksÙkjh	Booklet	Anuj Chauhan, Rupasi Tiwari,A S Yadav, Amit Kumar, G K Gaur, and Triveni dutt.	38	M & E Cell	**2023**
44.	'kwdj QkeZ esa LoPNrk rFkk folaØe.k	Booklet	Anuj Chauhan, Rupasi Tiwari,G K Gaur, Amit Kumar, Pratikshya Panda, Shekh Firdos ahamad and Triveni dutt.	8	M & E Cell	**2023**
M &	A technical manual on Antifungal Suceptibility	A technic	Abhishek, Sonu S, Nair, Shivprakash M	25		**2023**

E Cell	Testing of Dermatophytes from the Animal.	al manual	Rudramurthy, Athira V, Prasad Thomas, Bablu Kumar, Himani Dhanze, V K Chaturvedi, Rupasi Tiwari, Amit Kumar and Triveni dutt.			
46.	A technical manual on Isolation, Identification and Phenotypic Characterization of Dermatophytes from animals.	A technical manual	Abhishek, Sonu S, Nair, Shivprakash M Rudramurthy, Manish Kumar, Prasad Thomas, Bablu Kumar, Himani Dhanze, V K Chaturvedi, Rupasi Tiwari, Amit Kumar and Triveni dutt.	25	M & E Cell	**2023**
47.	A technical manual on Molecular Identification and Characterization of Dermatophytes from Animals.	A technical manual	Abhishek, Sonu S, Nair, Shivprakash M Rudramurthy, Jitendra K Bagra, Prasad Thomas, Bablu Kumar, Himani Dhanze, V K Chaturvedi, Rupasi Tiwari, Amit Kumar and Triveni dutt.	25	M & E Cell	**2023**
48.	Annual Progress Report of CAAST-ACLH (2021-22).	Book	Amit Kumar, Rupasi Tiwari, Triveni Dutt, Bablu Kumar, Om Shankar, Ashutosh Fular and Akansha Tiwari.	81	M & E Cell	**2023**
48.	Annual Progress Report of CAAST-ACLH (2022-23).	Book	Amit Kumar, Rupasi Tiwari, Bablu Kumar and Om Shankar	60	M & E Cell	**2023**
49.	Memoir- International Training under CAAST – ACLH Project	Book	Amit Kumar, Rupasi Tiwari, Bablu Kumar and Om Shankar	81	M & E Cell	**2023**


मुर्गियों का टीकाकरण
गलघोंटू या पुर्रका रोग
थनैला
चेचक रोग (पॉक्स)
खुरपका-मुँहपका रोग


Veterinary
BACTERIOLOGY
Haemorrhagic
Septicaemia
A Color Atlas on
Parasites of
Veterinary Importance
IVRI
Technologies
&
Services
पशुओं एवं पक्षियों के
महत्वपूर्ण रोग एवं टीकाकरण
Biosecurity
in
Livestock and Poultry Farms

B. List of Research Publications

SN	Publication	IF	NAAS
1.	Jess Vergis, Satyaveer Singh Malik, Richa Pathak, Manesh Kumar, Sunitha Ramanjaneya, Nitin Vasantrao Kurkure, Sukhadeo Baliram Barbuddhe and Deepak Bhiwa Rawool (2019). Antimicrobial efficacy of Indolicidin against multi-drug resistant Enteroaggregative Escherichia coli in a Galleria mellonella model. *Frontiers in Microbiology*. 10:2723. doi: 10.3389/fmicb.2019.02723.	4.076	10.02
2.	V V Dhanesh , Madhusudan Hosamani, Suresh H Basagoudanavar , Paramasivam Saravanan, Jitendra K Biswal, R P Tamil Selvan, Aparna Madhavan, Karishma Sehrish, Aniket Sanyal, B P Sreenivasa (2020). Immunogenicity and protective efficacy of 3A truncated negative marker foot-and-mouth disease virus serotype A vaccine. *Appl Microbiol Biotechnol* 104:2589–2602.	3.34	11.56
3.	Jess Vergis, S V S Malik, Richa Pathak, Manesh Kumar, R Sunitha, S B Barbuddhe, Deepak B Rawool (2019). Efficacy of Indolicidin, Cecropin A (1-7)-Melittin (CAMA) and Their Combination Against Biofilm-Forming Multidrug-Resistant Enteroaggregative Escherichia coli. *Probiotics and Antimicrobial Proteins*, 1-11, https://doi.org/10.1007/s12602-019-09589-8	2.92	11.27
4.	Ashwini Rameshrao Chaple, Gnanavel Venkatesan, Amit Kumar, Soumajit Sarkar, Dhanavelu Muthuchelvan, S Chandrasekar, Sanchay K Biswas, Karam Chand, Muthannan Andavar Ramakrishnan (2020). Genetic studies of terminal regions of vaccine and field isolates of capripoxviruses. *Infection, Genetic, Evolution*. 76, 104071	2.611	10.39
5.	Vishal Rai, Vikramaditya Upmanyu, Gulam Mohd, Ravi Kumar, Sanganagouda Koppad, Aleema Ansari, Durlav Prasad Bora, Awadh Bihari Pandey, Pronab Dhar, Ashok Kumar Tiwari (2020). Comparing the efficiency of different Escherichia coli strains in producing recombinant capsid protein of porcine circovirus type 2. *Molecular and Cellular Probes*. 52:101556. doi: 10.1016/j.mcp.2020.101556	2.511	9.29
6.	Anil Gattani, Shiv Varan Singh, Aditya Agrawal, M. Hira Khan, Praveen Singh (2019). Recent Progress in Electrochemical Biosensors as point of care diagnostics for livestock health. Analytical Biochemistry, 579: 25-34	2.507	9.19
7.	P.R. Deepak, P. Saravanan, J.K. Biswal, S.H. Basagoudanavar, H.J. Dechamma, V. Umapathi, B.P. Sreenivasa, R.P. Tamilselvan, N. Krishnaswamy, I. Zaffer, A. Sanyal (2019). Generation of acid resistant virus like particles of vaccine strains of foot-and-mouth disease virus (FMDV). Biologicals. Jul; 60:28-35. doi: 10.1016/j.biologicals.	1.872	7.96
8.	Mokshata Gupta, A.K. Pattanaik, Asmita Singh, Shalini Sharma, S.E. Jadhav and A.K. Verma (2020). Probiotic potential of lactic acid bacterial isolates from indigenous calves is superior to isolates from crossbred dairy calves. Animal Nutrition and Feed Technology,20 : 201-216	0.291	6.00
9.	Soumajit Sarkar, Ashwini Rameshrao Chaple, Aruna Kuniyal, Dhanavelu Muthuchelvan, Muthannan Andavar Ramakrishnan (2020). Resazurin Based Colorimetric Proliferation Assay for PBMCS of Goats and Sheep. *International Journal of Current Microbiology and Applied Sciences*. 9(2): 967-975.	0.16	**
10.	Ajay Kumar Yadav, Dheeraj Chaudhary, Sakshi Bhadouriya, S Chandrasekar, V V Dhanesh, Kaushal K Rajak, R P Singh, M A Ramakrishnan, R K Singh, Dhanavelu Muthuchelvan (2019). Expression and characterization of the non-structural protein V of small ruminant morbillivirus. *Virus Diseases.* **30**, 465–468.	0.78	5.95
11.	Sirsant Bhoomika, Ragini Hazari, Jay Prakash Yadav, Richa Pathak, Kaushik Satyaprakash, Diksha Gourkhede, Satya Veer Singh Malik, Sukhadeo B. Barbuddhe and Deepak B. Rawool (2019). Comparative Evaluation of Methicillin-Resistant and Methicillin Sensitive Staphylococcus aureus of Livestock Origin for Antibiotic Sensitivity, Biofilm Formation and Virulence in Galleria mellonella. *Journal of Animal Research.*9 (5): 775-781	-	5.43
12.	Bhoj Raj Singh, Dharmendra Kumar Sinha, Vinodh Kumar O.R, Abhijit M.Pawde, Ujjwal Kumar D.E, Vinod Kumar Gupta (2019). Comparative antimicrobial activity of Pogostemon cablin (patchouli) essential oil (PEO) and conventional antimicrobials against clinically important microbes. *World Journal of Pharmaceutical Sciences.* 7(8):47-6	1.3	--
13.	Shahzad Munazah, Garg Rajat, Devi Anjali, Shobha, Sheikh Fayaz Ahmad, Ram Hira (2019). Molecular detection of Babesia bigemina in subclinically infected cattle. *Journal of Immunology and Immunopathology*. 21: 55-60.	-	#*
14.	J. Vergis, S. Malik, R. Pathak, M. Kumar, S. Ramanjaneya, N. Kurkure, S.B. Barbuddhe, D.B. Rawool (2020). Efficacy of Indolicidin, CAMA, lactoferricin (17–30) and their combination against multi-drug resistant enteroaggregative Escherichia coli. *International Journal of Infectious Diseases*, 101(S1): 8-119	12.7	18.07

15.	Jess Vergis, Satyaveer Singh Malik, Richa Pathak, Manesh Kumar, Sunitha Ramanjaneya , Nitin Vasantrao Kurkure, Sukhadeo Baliram Barbuddhe and Deepak Bhiwa Rawool (2020). Exploiting Lactoferricin (17–30) as a Potential Antimicrobial and Antibiofilm Candidate against Multi-Drug-Resistant Enteroaggregative Escherichia coli. *Frontiers in microbiology*.11 https://doi.org/10.3389/fmicb.2020.57591711 :2168	6.06	12.26
16.	Jess Vergis, S V S Malik, Richa Pathak, Manesh Kumar, Nitin V Kurkure, S B Barbuddhe, Deepak B Rawool (2021). Exploring Galleria mellonella larval model to evaluate antibacterial efficacy of Cecropin A (1-7)-Melittin against multi-drug resistant enteroaggregative Escherichia coli. *Pathogens and Disease*.79 (3):1-11	3.3	9.95
17.	Diksha P. Gourkhede , Sirsant Bhoomika, Richa Pathak, Jay Prakash Yadav, Dani Nishanth, Jess Vergis, S.V.S. Malik, S.B. Barbuddhe, D.B. Rawool (2020). Antimicrobial efficacy of Cecropin A (1–7)-Melittin and Lactoferricin (17–30) against multi-drug resistant Salmonella Enteritidis. *Microbial Pathogenesis* 147 :104405	3.84	9.85
18.	Harshita Sood, Rupasi Tiwari And Triveni Dutt (2020), Adoption gap of scientific management practices among the commercial dairy farmers of Punjab. *Indian Journal of Animal Sciences*, 90 (5):816-818	0.278	6.29
19.	Pratikshya Panda, Rupasi Tiwari, Triveni Dutt and Rakesh Roy (2020). Information needs of paravets on artificial insemination in India. *Indian Journal of Animal Sciences.* 90 (5):716-719	0.278	6.29
20.	Amandeep Singh, Rupasi Tiwari, Pratikshya Panda and Triveni Dutt (2020). Organic Waste Production and Utilization by Dairy Farmers in District Ludhiana of Punjab. *Indian journal of Extension Education*, 56 (1):20-27	--	5.95
21.	Amandeep Singh, Rupasi Tiwari, Pragya Joshi, Triveni Dutt (2020). Insights into organic waste management practices followed by dairy farmers of Ludhiana District, Punjab: Policy challenges and solution. *Waste Management & Research.* 38 (3), 291-299	4.2	10.43
22.	Amandeep Singh, Rupasi tiwari, Triveni Dutt and Chandrahas (2020). Augmentation of farmers' income in India through sustainable waste management techniques. *Waste Management & Research*, 39 (6):https://doi.org/10.1177/0734242X20953892.	4.2	10.43
23.	Harshita Sood, Rupasi Tiwari, Amandeep Singh and Triveni Dutt (2020). Development of a need based IVRI- Dairy Manager App and its perceived Utility. *International Journal of Current Microbiology and Applied Sciences*. 9 (12); 3003-3009	--	**
24.	Harshita Sood, Rupasi Tiwari, Triveni Dutt (2020). The Utilization pattern of ICT tools among the Dairy farmers of Punjab. *Bulletin of Environment, Pharmacology and Life Sciences.* Vol 10 (1) : 34-37	--	**
25.	Sood Harshita, Tiwari Rupasi, Panda Pratikshya and Dutt Triveni (2021). Information needs of Commercial Dairy farmers of Punjab. *Indian Journal of Extension Education.* 57(2): 49-54	--	5.95
26.	Pragya Joshi, Rupasi Tiwari, Pratikshya Panda, Amandeep Singh and Triveni Dutt (2021). Constraints Perceived in ICT Tools Utilization by Veterinary Graduates. *Indian Journal of Extension Education*. 57(1):120-123	--	5.95
27.	Mokshata Gupta, Ashok K Pattanaik, Asmita Singh, Shalini Sharma, Sunil E Jadhav (2021). An appraisal of the gut health modulatory effects of a calf faecal-origin probiotic Lactobacillus salivarius CPN60 using Wistar rats with dextran sulfate sodium-induced colitis. *Journal of the Science of Food and Agriculture* ; 101(4): 1340–1348	4.35	10.13
28.	Bhoj Raj Singh , Akanksha Yadav, Dharmendra Kumar Sinha and Obli Rajendran Vinodh Kumar (2020). Potential of herbal antibacterials as an alternative to antibiotics for multiple drug-resistant bacteria: An analysis. *Research Journal of Veterinary Sciences*. 13(1):1-8	-	-
29.	Mahtab Z. Siddiqui, Arnab Roy Chowdhury, Bhoj Raj Singh, Sudarshan Maurya & Niranjan Prasad (2020). Synthesis, characterization and antimicrobial evaluation of Piyar gum-induced silver nanoparticles. *National Academy Science Letters*. 44:203-208	1.33	7.33
30.	Bhoj Raj Singh and Shiv varan singh (2020). Metallo-β-Lactamase and extended-spectrum-β-Lactamase production by *Serratia* strains [Letter]. *Infection and Drug Resistance*. 13:1295-1297.	2.984	8.9
31.	Bhoj R Singh, Dharmendra K Sinha, Ravi K Agrawal and Prasad Thomas (2020). Comparative sensitivity of *Salmonella* isolates from clinical infections in animals and birds to herbal and conventional antimicrobials. *International Journal of Pharmaceutica Analytica Acta*. 3(1):1-009.	0.898	6.8
32.	Singh, Bhoj R.; Sinha, Dharmendra K.; OR, Vinodh K.; Vadhana, Prasanna; Bhardwaj, Monika; Saraf, Archana; Dubey, Sakshi; Pawde, Abhijit M; De, Ujjwal K.; Gupta, Vinod K. (2020). Antimicrobial activity of Agarwood oil against multiple-drug-resistant (MDR) microbes of clinical, food and environmental origin. *Current Drug Discovery Technologies*.17 (3): 348-356	0.30	-
33.	Shikha Tamta, Obli Rajendran Vinodh Kumar, Shiv Varan Singh, Bommenahalli Siddaramiah Pruthvishree, Ravichandran Karthikeyan, Ramkumar Rupner, Dharmendra Kumar Sinha and Bhoj Raj Singh (2020). Antimicrobial resistance pattern of extended-spectrum β-lactamase-producing	1.89	4.83

	Escherichia coli isolated from fecal samples of piglets and pig farm workers of selected organized farms of India. *Veterinary World*. 13(2):360-363.		
34.	Bina mishra, G. Ravi kumar, Sonal, C L patel and V K Chaturvedi (2018). Phylogenetic analysis of sheep pox virus (SPPV) Virion Core Protein P4a gene revealed extensive sequence conservation among capripox viruses, (2018). *Indian Journal of Animal Sciences*. 88 (1): 21–24	0.227	6.29
35.	Bina Mishra, Piyali Mondal, C. L. Patel, Insha Zafir, Rachna Gangwar, Neha Singh, Joyshikh Sonowal, Deepanker Bisht, Amit Ranjan Sahu, Mumtaz Baig, Basavaraj Sajjanar, R. K. Singh, Ravi Kumar Gandham (2018). VARV B22 Rhomologue as phylogenetic marker gene for Capripoxvirus classification and divergence time dating. *Virus Genes*. 55(1):51-59.	1.60	8.20
36.	Akansha Singh, Arnav Mehrotra, Cedric Gondro , Andrea Renata da Silva Romero , Ashwni Kumar Pandey , A. Karthikeyan, Aamir Bashir, B. P. Mishra , Triveni Dutt and Amit Kumar(2020). Signature of selection in composite Vrindavani cattle of India. *Frontiers in Genetics*. 11:589496. doi: 10.3389/fgene.2020.589496.	4.77	10.77
37.	Arnav Mehrotra, Bharat Bhushan, Amit Kumar, Manjit Panigrahi, Karthikeyan A., Akansha Singh, Ashok K. Tiwari, Hubert Pausch, Triveni Dutt, and Bishnu P. Mishra (2022). A 1.6 Mb region on SSC2 is associated with antibody response to classical swine fever vaccination in a mixed pig population. *Animal Biotechnology*. 33 (6): 1128-133	2.14	8.14
38.	Singh Purnima, Mondal Tanmay, Kumar Kuldeep, Das Kinsuk, Mahalakshmi N., Madhusoodan A.P., Bag Sadhan (2020). Expression of cardiac specific cell marker in Ex Vivo differentiated canine ipsc. *Indian Journal of Animal Research*. 54 (5): 553-557	0.42	6.43
39.	Tanmay Mondal, Purnima Singh, Pranay Kumar Konda, Kuldeep Kumar, Swati Dubey, Mokshata Gupta, Mihir Sarkar and Sadhan Bag (2020). Transcriptional Abundance of Myosin Light Chain 2 Gene in Cardiac Differentiated Canine Induced Pluripotent Stem Cells. *Journal of Animal Research*, 10 (2): 173-179.	0.42	5.43
40.	Chandan Prakash , Bablu Kumar , Rabindra Prasad Singh, Praveen Singh, Garima Shrinet , Aparajita Das, Marcia Ashmi , Abhishek, Karam Pal Singh, Mithilesh Kumar Singh, Vivek Kumar Gupta (2021). Development and evaluation of a gold nanoparticle based Lateral Flow assay (LFA) strip test for detection of Brucella spp. *Journal Of Microbiological methods*. 184: https://doi.org/10.1016/j.mimet.2021.106185	2.62	8.62
41.	Samiran Bandyopadhyay and Indranil Samanta (2020). Antimicrobial Resistance in Agri-Food Chain and Companion Animals as a Re-emerging Menace in Post-COVID Epoch: Low-and Middle-Income Countries Perspective and Mitigation Strategies. *Frontiers in Veterinary Science*. Volume 7 – https://doi.org/10.3389/fvets.2020.00620	3.47	9.47
42.	Florence Mutua, Garima Sharma, Delia Grace, Samiran Bandyopadhyay, Bibek Shome and Johanna Lindah (2020). A review of animal health and drug use practices in India and their possible link to antimicrobial resistance. *Antimicrobial Resistance & Infection Control*. 9(1):103. doi: 10.1186/s13756-020-00760-3.	3.224	-
43.	A Banerjee, K Batabyal , A D Singh, S N Joardar, S Dey, D P Isore, T K Sar, T K Dutta, S Bandyopadhyay, I Samanta (2020). Multi-drug resistant, biofilm-producing high-risk clonal lineage of Klebsiella in companion and household animals. *Letter in Applied Microbiology*. 71(6):580-587	2.81	8.81
44.	Samiran Bandyopadhyay, Jaydeep Banerjee, Debaraj Bhattacharyya, Rahul Tudu, Indranil Samanta, Premanshu Dandapat, Pramod K Nanda, Arun K Das, Bimalendu Mondal, Subhasis Batabyal, Tapan K Dutta (2021). Companion Animals Emerged as an Important Reservoir of Carbapenem-Resistant Enterobacteriaceae: A Report from India. *Current Microbiology*. 78, :1006–1016	2.34	8.34
45.	Miguel Rodríguez Pulido, Ranjitha H. B and Margarita Sáiz (2020). A Wide-Ranging Antiviral Response in Wild Boar Cells Is Triggered by Non-coding Synthetic RNAs From the Foot-and-Mouth Disease Virus Genome. *Frontiers in Veterinary Science*. 7:495. doi: 10.3389/fvets.2020.00495	3.47	9.47
46.	M. K. Patra, U. K. De, Y. Kent, S. Rungsung, N. Krishnaswamy & B. C. Deka (2021). Influence of seasonal variation on post-farrowing dysgalactia syndrome (PFDS) and serum biochemistry profiles in the periparturient sow. *Tropical Animal Health and Production*. 53, 346. https://doi.org/10.1007/s11250-021-02793-1	1.89	7.89
47.	Jitendra Singh Gandhar, Ujjwal Kumar De, Anju Kala, Yashpal Singh Malik, Supriya Yadav, Babul Rudra Paul, Shivendra Kumar Dixit, Shubhankar Sircar Pallab Chaudhary, Manas Kumar Patra, Gyanendra Kumar Gaur (2022). Efficacy of Microencapsulated Probiotic as Adjunct Therapy on Resolution of Diarrhea, Copper-Zinc Homeostasis, Immunoglobulins, and Inflammatory Markers in Serum of Spontaneous Rotavirus-Infected Diarrhoetic Calves. *Probiotics Antimicrob Proteins*. **14**:	5.26	11.27

	1054–1066		
48.	Mithilesh Singh, Pranav Tripathi, Smriti Singh, Manisha Sachan, Vishal Chander, Gaurav Kumar Sharma, Ujjwal Kumar De, Sathish Kota, Kalyani Putty, Raj Kumar Singh & Seema Nara(2021). Identification and characterization of DNA aptamers specific to VP2 protein of canine parvovirus. *Appl Microbiology and Biotechnology*. 105(23):8895-8906.	5.56	11.56
49.	Marcia Ashmi, Bablu Kumar, Ravi Kant Agrawal, Chandan Prakash, Abhishek, Karam Pal Singh (2021). Development of BruAb2_0168 based isothermal polymerase spiral reaction assay for specific detection of Brucella abortus in clinical samples. *Molecular and Cellular Probes*. 59:, https://doi.org/10.1016/j.mcp.2021.101761	3.36	9.29
50.	Joyshikh Sonowal , Chhabi Lal Patel , Ravi Kumar Gandham , Basavaraj Sajjanar , Raja Ishaq Nabi Khan, Manas Ranjan Praharaj, Waseem Akram Malla, Deepak Kumar, Kapil Dev, N. Barkathullah , Krishna Bharali , Amitesh Dubey , D. Lalita, Insha Zafir , B. P. Mishra , Bina Mishra (2021). Genome-Wide Expression Analysis Reveal Host Genes Involved in Immediate-Early Infections of Different Sheeppox Virus Strains. *Gene*. 30;801:145850	3.91	9.91
51.	Piyali Mondal, C L Patel, Rachna Sagar, Insha Zafir, Joyshikh Sonowal, Kapil Dev, Krishna Bharali, Neha Singh, Barkathullah N, Amitesh Dubey, Bp Mishra, Bina Mishra (2021). Selection of a suitable viral DNA extraction method for Sheeppox virus in cell culture. *Romanian Biotechnological Letters*. 26(6): 3095-3101	0.82	6.77
52.	Abhishek Hota, Sushil Kumar Maiti, P.J. Vijayakumar, Med Ram Verma, Anup Kumar Tewari (2022). Analysis of the epidemiological variables associated with a high prevalence of bovine surra in the Chhattisgarh state of India. *Veterinary Parasitology: Regional Studies and Reports.* https://doi.org/10.1016/j.vprsr.2022.100728	1.40	8.16
53.	A Review in Emerging and Re-emerging Infectious Diseases of Livestock and Poultry (2021). Prof. (Dr.) K.). Vijayakumar (Ed). Pp 92-125. [Book chapter]	-	-
54.	Pallab Chaudhuri, Mani Saminathan, Syed Atif Ali, Gurpreet Kaur , Shiv Varan Singh, Jonathan Lalsiamthara, Tapas K. Goswami, Ashwini K. Singh, Sandeep K. Singh , Praveen Malik and Raj K. Singh (2021). Immunization with Brucella abortus S19Δper Conferred Protection in Water Buffaloes against Virulent Challenge with B.abortus StrainS544.*Vaccines*.9:1423. https://doi.org/10.3390/vaccines9121423	7.76	10.96
55.	Amandeep Singh, Rupasi Tiwari &Triveni Dutt (2021). An ICT driven intervention for transforming waste to wealth: methodic development and assessment of IVRI-Waste Management Guide App. *Journal of Material Cycles and Waste Management*. 23: 1544–1562 https://doi.org/10.1007/s10163-021-01236-1	3.3	9.58
56.	Pratikshya Panda, Rupasi Tiwari, Pragya Joshi, Amandeep Singh & Triveni Dutt (2021). Adoption of scientifically recommended artificial insemination practices by paravets: a depiction of current scenario of four states in India. *Tropical Animal Health and Production*, 53: 490 DOI:10.1007/s11250-021-02937-3	1.89	7.89
57.	Pratikshya Panda, Rupasi Tiwari, Sushant Handage and Triveni Dutt (2021). Information Source Utilization by Livestock and Poultry Farmers of Uttar Pradesh. *Indian Journal of Extension Education*, 58 (1):172-175	-	5.95
58.	Pratikshya Panda, Rupasi Tiwari, Harshita Sood, Amandeep Singh and Triveni Dutt (2021). Development of Need Based IVRI-Artificial Insemination App and its Perceived utility. *Indian Journal of Extension Education*, 57 (1):142-147	-	5.95
59.	Aquil Mohmad, B C Saravanan, H V Manjunathachar, Dinesh Chandra, Sheikh Firdous Ahmad, Waseem Akram Malla, Bilal Ahmad Malla, Nisha Bisht, Ishfaq Maqbool (2021). A Multi-copy Nucleic Acid-Based Diagnostic Test for Bovine Tropical Theileriosis. *Acta Parasitology*. 67:504–510	1.53	7.53
60.	Book. Alternative Approaches to Mitigate Antimicrobial Drug Resistance. October 2021. Publisher: Division of Epidemiology, ICAR-Indian Veterinary Research Institute, Izatnagar, India. ISBN: 978-93-5493-199-4. Edited by: Bhoj R Singh, Dharmendra K Sinha, & Ravi Kant Agrawal	-	-
61.	Bhoj R Singh, BS Pruthvishree, Akanksha Yadav, Ravichandran Karthikeyan, Obli R Vinodhkumar and Dharmendra K Sinha (2021). Comparative Antimicrobial Activity of Aspirin, Paracetamol, Flunixin Meglumine, Tolfenamic Acid, Diclofenac Sodium and Pheniramine Maleate. *Acta Scientific Veterinary Sciences* 3.(9) : 30-42	1.008	7.0

62.	Govindarajan Bhuvana Priyaa,b, Ravi Kant Agrawalc, Arockiasamy Arun Prince Miltond, Sanjod Kumar Mendirattac, Bhoj Raj Singhe, Deepak Kumarf, Madhu Mishraa, and Ravi Kumar Gandham (2021). Isothermal amplification assay for visual on-site detection of Staphylococcus aureus in Chevon. *Food Biotechnology*. 35 (3): 221–236	2.29	8.30
63.	Technical Report: Antimicrobial drug resistance pattern of Raoultella terrigena isolates from clinical, para-clinical samples from animals, birds and humans and the environment. September 2021. DOI: 10.13140/RG.2.2.11605.14567. Report number: Clin/Epid/ICAR-IVRI/04/2021.	-	-
64.	Technical Report. Is amoxicillin-sulbactam better than other β-lactam antibiotics on respiratory tract pathogens? July 2021. DOI: 10.13140/RG.2.2.15613.49124 Report number:: Clin/Epid/ICAR-IVRI/04/2021	-	-
65.	Technical Report. Antimicrobial susceptibility of Erwinia and Pectobacterium associated with infections and diseases in humans, animals and birds. July 2021. DOI: 10.13140/RG.2.2.34346.95688 Report number: Clin./Epid./ICAR-IVRI/03/2021	-	-
66.	Pratik Ramesh Wankhade, Hari Om Pandey, Mukesh Singh, AKS Tomar, Cherryl Dimphna Miranda, Arun Somagond, Prachurya Biswal, Med Ram Verma, Gyanendra Kumar Gaur and Triveni Dutt (2021). Milking frequency affects consumptive water usage in the parlor. *The Pharma Innovation Journal*. 10 (7): 917-919	-	5.23
67.	Seema Yadav, P K Bharti, Chandrahas, G K Gaur, Abhishek, Mukesh Singh and Arun Somagond (2021). Aerobic composting of pig excreta as a model for inoculated deep litter system in sty using Indigenous Microorganisms (IMOs) .2021. *Indian Journal of Animal Sciences* 90 (12): 1649–1654	0.316	6.29
68.	Deepak Upadhyay, Mukesh Singh, Gyanendra Kumar Gaur, Panch Kishor Bharti and Med Ram Verma (2021). Effect of flooring system on maintenance behaviours of cows. *Indian Journal of Animal Sciences*, 91 (8): 675–680	0.316	6.29
69.	Vandana, Singh Mukesh, Kumar Brijesh, Gaur GK, Verma MR, Tomar AKS and Triveni Dutt, (2021). Effect of floor enrichment of calving pen with rubber mattress on prepartum behaviour of Tharparkar cow during winter season. *Journal of Animal-Research*. DOI:10.18805/IJAR.B-4707	0.42	5.43
70.	Vandana, Singh Mukesh, Kumar Brijesh, Gaur GK, Verma MR and Triveni Dutt, (2021). Effect of floor enrichment of calving pen with rubber mattress on the preparturient behaviour of Vrindavani cows. *Ruminant Science*. 10(2):399-403	-	5.47
71.	Samiran Bandyopadhyay, Debaraj Bhattacharyya , Indranil Samanta, Jaydeep Banerjee, Md Habib, Tapan K. Dutta and Triveni Dutt (2021). Characterization of Multidrug-Resistant Biofilm-Producing Escherichia coli and Klebsiella pneumoniae in Healthy Cattle and Cattle with Diarrhea. *Microb Drug Resist* https://doi.org/10.1089/mdr.2020.0298	2.6	--
72.	Bhattacharyya D, Banerjee J, Habib M, Thapa G, Samanta I, Nanda PK, Dutt T, Sarkar K, Bandyopadhyay S. (2021). Lucidating the resistance repertoire, biofilm production, and phylogenetic characteristics of multidrug-resistant Escherichia coli isolated from community ponds: A study from West Bengal, India. *Water Environment Research*. https://doi.org/10.1002/wer.1678	3.30	9.30
73.	Lalzampuia H, Elango S, Biswal JK, Krishnaswamy N, Selvan RPT, Saravanan P, Mahadappa P, V Umapathi, Reddy GR, Bhanuprakash V, Sanyal A, Dechamma HJ.(2021). Infection and protection responses of deletion mutants of non-structural proteins of foot-and-mouth disease virus serotype Asia1 in guinea pigs. *Applied Microbiology and Biotechnology***.** 106: 273–286	5.56	11.56
74.	Arun Somagond, B.H. Manjunatha Patel, , Ashok Kumar Pattanaik , Med Ram Verma , Narayanan Krishnaswamy, Tamil Selvan Ramasamy Periyasamy , Gyanendra Kumar Gaur, Prachurya Biswal, Seema Yadav, Triveni Dutt, V. Bhanuprakash (2023). Effect of physical form of the therapeutic diet on the behaviour of crossbred calves experimentally infected with foot-and-mouth disease virus. *Preventive Veterinary Medicine.* 212: https://doi.org/10.1016/j.prevetmed.2023.105843	2.6	9.37
75.	Huildore Bommanna Ranjitha, Valiya Valappil Dhanesh, Madhusudan Hosamani, B. P. Sreenivasa, Uzma Jabeen, Jitendra Kumar Biswal, P. Saravanan, Aniket Sanyal, Veerakyathappa Bhanuprakash, Suresh H. Basagoudanavar. (2023). Thermo stable negative - marker foot- and-mouth disease virus serotype O induces protective immunity in guinea pigs. *Applied Microbiology and Biotechnology*. 107(4):1285–1297	5.56	11.56
76.	Tanmay Mondal, Kinsuk Das, Purnima Singh, Mahalakshmi Natarajan, Bharat Manna, , Amit Ghosh, Praveen Singh, Subodh Kumar Saha, PhDe , Kuldeep Dhama, Triveni Dutt, Sadhan Bag.(2022). Thin films of functionalized carbon nanotubes support long-term maintenance and cardio-neuronal differentiation of canine induced pluripotent stem cells. *Nanomedicine: Nanotechnology, Biology and Medicine*.40: https://doi.org/10.1016/j.nano.2021.102487	6.45	11.4

77.	Vijayakumar Jawalagatti, Perumalraja Kirthika, Praveen Singh, Vinodhkumar O.R, Saravanan Buddhi Chandrasekaran, Rajesh Kumar Chittlangia, Anup Kumar Tewari. (2023). Expression kinetics of cytokines and the humoral antibody response concerning short-term protection induced by radiation-attenuated Trypanosoma evansi in bovine calves. *Vaccine*.41:1668-1678.	4.17	10.17
78.	Abhishek Hota, Sushil Kumar Maiti, P.J. Vijayakumar, Med Ram Verma, Anup Kumar Tewari. (2022). Analysis of the epidemiological variables associated with a high prevalence of bovine surra in the Chhattisgarh state of India. *Veterinary Parasitology: Regional Studies and Reports*.31: https:// doi.org/ 10.1016/j. vprsr. 2022. 100728	1.4	6.4
79.	Munazah Shahzad, Rajat Garg, Shobha Yadav, Anjali Devi, Hira Ram, P.S. Banerjee. (2021). Comparative evaluation of Babesia bigemina truncated C-terminal rhoptry associated protein-1 and 200 kDa merozoite protein in indirect enzyme-linked immunosorbent assay. *Ticks and Tick-borne Diseases.*12(5): 101783	3.2	9.82
80.	Savita Bisen, Andleeb Aftab, K Jeeva, M Silamparasan, Shobha Yadav, Dinesh Chandra, M Sankar, Rajat Garg, O K Raina. (2021). Molecular and serological detection of Anaplasma infection in carrier cattle in north India. *Veterinary Parasitology: Regional Studies and Reports*. 24: https:// doi.org/ 10.1016/j. vprsr. 2021.100550	1.4	6.4
81.	Pallab Chaudhuri, Mani Saminathan, Syed Atif Ali, Gurpreet Kaur, Shiv Varan Singh, Jonathan Lalsiamthara, Tapas K. Goswami, Ashwini K. Singh, Sandeep K. Singh, Praveen Malik and Raj K. Singh (2021) Immunization with Brucella abortus S19Δper Conferred Protection in Water Buffaloes against Virulent Challenge with B. abortus Strain S544. *Vaccine.* 9:1423. https:// doi.org/10.3390/vaccines9121423	4.17	10.17
82.	Singh BR, Pawde AM, Yadav A, Sigh SV, Vinodhkumar OR and Sinha DK (2020). Bacteriological Analysis of a Lethal Outbreak of *Pasteurella canis* in Spotted Deer (*Axis Axis*) in a Zoological Park in Bareilly, India. *Journal of Bacteriology and Mycology.* 7(1)1124	2.8	8.8
83.	Akanksha Yadav, Bhoj Raj Singh, Abhijit M. Pawde, Prasad Thomas, Vidya Singh, Rohit Singh, Shiv Varan Singh, Karthikeyan Ravichandran, Himani Agri, Varsha Jayakumar, Raghavendra G. Amachawadie (2023). Draft Genome Sequence of a Pasteurella multocida Strain Isolated from a Spotted Deer (Axis axis) in India. *Microbiology resource announcements.* 12(6): 10.1128/mra.01297-22.	0.30	6.3
84.	Yancy Mary Issac, Ashok Kumar Pattanaik, Sunil Eknath Jadhav, Anju Kala and Gyanendra Kumar Gaur (2022). Effect of Supplementing Graded Levels of Pulverized Jerusalem Artichoke Tuber on the Growth Performance of Pre-Weaned Calves. *Journal of Animal Research.* 12(04): 497-503.	0.42	5.42
85.	Shiv K. Tyagi, Arnav Mehrotra, Akansha Singh, Amit Kumar, Triveni Dutt, Bishnu P. Mishra and Ashwni K. Pandey (2021). Comparative Signatures of Selection Analyses Identify Loci Under Positive Selection in the Murrah Buffalo of India. *Frontier in Genetics.*12:673697	4.7	10.77
86.	Marcia Ashmi , Bablu Kumar, Sanjana , Abhishek , Deepak Kumar, Praveen Singh (2022). Development of a labelled-LFIA coupled with LAMP for the rapid and specific detection of B. melitensis targeting BMEI1661 gene. *Research Square.* https://doi.org/10.21203/rs.3.rs-2259423/v1		
87.	Akansha Singh, Amit Kumar, Pushpendra Kumar, Narayan Dutt, Mahesh S. Dige, Arun K. Verma, B.P. Mishra, Triveni Dutt (2023). Comparative Analysis of Milk Fatty Acids and Minerals of Indigenous vis-à-vis Crossbred Cattle and Buffaloes. *Indian Journal of Animal Research*. 57 (2): 161-164	0.43	6.43
88.	Sheikh Firdous Ahmad , Akansha Singh , Munish Gangwar, Subodh Kumar, Triveni Dutt , Amit Kumar (2023). Haplotype-based association study of production and reproduction traits in multigenerational Vrindavani population. *Gene*. 867: https:// doi.org/ 10.1016/j.gene.2023.147365	3.5	9.91
89.	Snehasmita Panda, Gyanendra Kumar Gaur, Sheikh Firdous Ahmad, Swagatika Priyadarshini, Amit Kumar and Triveni Dutt (2022). Kinship coefficient of Landlly pigs using porcine 60K SNP Beadchip and pedigree data. *The Pharma Innovation.* 11(2): 1907-1909		5.23
90.	Akansha Singh , Amit Kumar, Arnav Mehrotra, Karthikeyan A. , Ashwni Kumar Pandey , B. P. Mishra, Triveni Dutt(2021). Estimation of linkage disequilibrium levels and allele frequency distribution in crossbred Vrindavani cattle using 50K SNP data. *Plos One.* | *https://doi.org/10.1371/journal.pone.0259572*	3.24	9.75
91.	Snehasmita Pandaa, Amit Kumara, Gyanendra Kumar Gaurb, Sheikh Firdous Ahmada, Anuj Chauhanb,Arnav Mehrotraa,c, and Triveni Dutt (2022). Genome wide copy number variations using Porcine 60K SNP Beadchip inLandlly pigs. *Animal Biotechnology*. https://doi.org/10.1080/10495398.2022.2056047	2.14	8.14

92.	Mokshata Gupta, Ashok Kumar Pattanaik, Asmita Singh, Shalini Sharma, Sunil Ekanath Jadhav, Avneesh Kumar, Ashok Kumar Verma (2021). Functional and probiotic characterization of Ligilactobacillus salivarius CPN60 isolated from calf faeces and its appraisal in rats. *Journal of Bioscience and Bioengineering*. *132(6):*575-584	3.18	9.19
93.	Aruna Kuniyal, Soumajit Sarkar, Shanmugam ChandraSekar, Dhanavelu Muthuchelvan, Awadh Bihari Pandey, Kuldeep Dhama, Muthannan Andavar Ramakrishnan (2022). Coinfection kinetics of goatpox virus and peste- des- petits- ruminant's virus in Vero cells. *Brazilian journal of microbiology*. 53:2309–2314	2.21	8.21
94.	Aparna Madhavan, Dhanesh VV, DPR Selvaraj, Shreya Gopinath, Sreenivasa BP, Tamil Selvan RP, Aniket Sanyal, Thiyagarajan S and Saravanan P (2021). An optimized protocol for purification of virus-like particles of foot-and-mouth disease virus produced in the baculovirus expression system. *The Pharma Innovation Journal.* 10(10): 33-37		5.23
95.	Mousumi Bora, Chhabi Lal Patel, Kaushal Kishor Rajak, Med Ram Verma, Raja Wasim Yousuf, Rabindra Prasad Singh (2020). Development of a process for upscaling and production of thermotolerant Peste-des-petits ruminant's vaccine. *Virusdisease*. 31(3): 357–368	0.48	5.95
96.	Richa Arora, Waseem Akram Malla, Arpit Tyagi, Sonalika Mahajan, Basavaraj Sajjanar and Ashok Kumar Tiwari (2021). Canine Parvovirus and Its Non-Structural Gene 1 as Oncolytic Agents: Mechanism of Action and Induction of Anti-Tumor Immune Response. *Frontier in Oncology.*11:648873	5.78	11.74
97.	Mahalakshmi Natarajan a , Purnima Singh a , Tanmay Mondal a , Kuldeep Kumar a , Kinsuk Das b , Triveni Dutt c , Sadhan Bag (2021). In vitro propagation and cardiac differentiation of canine induced pluripotent stem cells on carbon nanotube substrates. *Tissue and Cell.*71:101571	2.58	8.58
98.	Mondal, T., Konda, P.K., Das, K., Kumar, K., Dutt, T. and **Bag, S** (2022). Evaluation of cytocompatibility as assessed by genomic stability of canine induced pluripotent stem cells propagated on Carbon Nanotube Substrates. ***Indian Journal of Animal Research, DOI: 10.18805/ijar.B-3829***	0.29	6.23
99.	Yadav, S., Garg , R., Kumari, P., Bisen, S., Ram, H. and Raina, O.K. (2022). Evaluation of a recombinant MSP5 based dot-elisa for serodiagnosis of *Anaplasmamarginale* infection in bovines. *Indian Journal of Comparative Microbiology, Immunology and Infectious Diseases*, **43(2)**: 115-121.		4.79
100	Sudarshan Mahala, Amit Kumar, Hari Om Pandey, Shikha Saxena, Shivani Khanna, Manoj Kumar, Deepak Kumar, Ujjwal Kumar De, Ashwni Kumar Pandey, Triveni Dutt .2024.Milk exosomal microRNA profiling identified miR-375 and miR-199-5p for regulation of immune response during subclinical mastitis of crossbred cattle. Nolecular Biology Reports. 51, 59 https://doi.org/10.1007/s11033-023-09070-4.	2.8	8.80

Annexure-III

II. Mobile and Web Applications

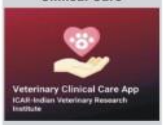
SN	Name of App	Date of Upload	Star Rating	Downloads	Reviews
1	IVRI-Artificial Insemination App	06.03.2018	4.6*	5T+	40
2	IVRI-Vaccination Guide app	22.11.2018	4.4*	10T+	115
3	IVRI- Dairy Manager	31.05.2018	4.8*	5T+	42
4	IVRI- Pig ration	27.09.2018	4.4*	5T+	35
5	IVRI-Waste Management Guide	20.04.2019	5*	1T+	80
6	IVRI- Veterinary Clinical Care	04.02.2020	4.4*	10T+	95
7	IVRI-Zoonoses App	19.01.2020	4.8*	1T+	33
8	IVRI-Technology And services App	26.02.2020	4.9*	1T+	19
9	IVRI-Technology And services, in English	01.07. 2021	4.9*	1T+	19
10	IVRI-Disease Control , in English	16.10.2020	3.9*	1T+	27
11	IVRI-Zoonoses , in English	01.01.2020	4.8*	1T+	33
12	IVRI- Veterinary Clinical Care , in hindi	22.12.2021	4.4*	10T+	95
13	IVRI- Biosecurity & Biosafety (Jaiv Suraksha) in English	23.06.2021	4.9*	500+	54
14	IVRI-Antimicrobial Resistance (In English)	20.11.2021	5*	500+	12
15	IVRI-Animal Genetics and Breeding Tutorial App	13.09. 2022	4.9*	1T+	22
16	IVRI- Veterinary Surgery and Radiology Tutorial App	19.09. 2022	4.6*	500+	5
17	IVRI – Online Veterinary Clinic	21.11.2022	4.9*	1T+	18

Educational videos developed under CAAST-ACLH project

.N	Name of Video	Duration (Min.)	te of launch	Views	Link
1	Heat detection in Dairy Animals In Hindi	2:42	3/Aug/2019	1.7K+	https://www.youtube.com /watch?v=MHUxt9ghzh8&t=7s
2	Heat detection in Dairy Animals In English	2:28	2/Nov/2018	1.9K+	https://youtu.be/UDaT0i4JjpI
3	Neonatal Calf Management Hindi	1:55	7/July/2018	1.8K+	https://youtu.be/OmgnEGyZNg8
4	Neonatal Calf Management In English	1:54	2/July/2018	820+	https://youtu.be/wXSHzzz9RpI
5	Clean Milk Production In Hindi	3:02	1/Jun/2018	6.1K+	https://youtu.be/oKfymBSvUQ4
6	Clean Milk Production In English	3:03	1/Jun/2018	5.5K+	https://youtu.be/dl9dag5VUcA
7	Artificial Insemination in Dairy Animals Hindi	4:02	1/Mar/2018	277K+	https://youtu.be/flCHtw1xMDg
8	Artificial Insemination in Dairy Animals In English	3:58	1/Mar/2018	10K+	https://youtu.be/f2YTB1UYvZ4
9	Heat detection using rystoscope In Hindi	2:31	1/Mar/2018	4.8K+	https://youtu.be/9bgsuPrWQ_Y
10	Heat detection using CrystoscopeIn English	2:35	1/Mar/2018	2K+	https://youtu.be/iR6WIYEXvYg
11	Uterine torsion in cattle &buffaloes In English	5:59	1/Jan/2020	6.8K+	https://www.youtube.com/ watch?v=5hvSTWMu-mw
12	Epoxy external skeletal fixation In English	7:00	6/Dec/2019	5.1K+	https://www.youtube.com/ watch?v=QTG9-ui-nSo
13	l skeletal fixation for the management of fracture in large animals In English	7:21	7/Oct/2019	2.4K+	ww.youtube. com/ watch ? v= JdVn Oy DNLg0&t=290s
14	ystostomy in calf with ruptured bladder In English	6:02	0/Apr/2019	7.6K	https://www.youtube.com/ watch?v=IXdsfXoHmlo
15	Tube cystostomy in goat In English	5:42	0/Apr/2019	15K+	https://www.youtube.com/ watch?v=ZJSl1e0CvjE
16	Tendon Repair in Animal in English	4:38	7/Mar/2021	2.5K+	https://www.youtube.com/ watch?v=oVwXTZeTFp0
17	ube Cystostomy and Urethrotomy in Bull in English	7:51	7/Mar/2021	2.6K+	https://www.youtube.com/ watch?v=iRjZpEwr9SI
18	Biosecurity in Poultry farms (Hindi)	5:09	/April/2021	1.4K+	ttps://www.youtube.com/watch?v=rGbC0jAP6Mg
19	Biosecurity in Dairy farms (English)	3:09	/April/2021,	1.9K+	https://www.youtube.com/ watch?v=kjTf9BwZ0io
20	Biosecurity in Dairy farms (Hindi)	3:14	/May/2021,	779+	https://www.youtube.com/ watch?v=EmN-AWlQrpo
21	Biosecurity in Pig farms (English)	3:54	/April/2021	1.8K+	https://www.youtube.com/ watch?v=NNp7bTQFHkc
22	Biosecurity in Pig farms (Hindi)	3:44	/ May/2021	635+	https://www.youtube.com/ watch?v=cc9_SDSgSvY

NAHEP

Centre of Advanced Agricultural Science & Technology Advanced Centre for Livestock Health (CAAST-ACLH)
ICAR-Indian Veterinary Research Institute, Izatnagar
Developed e-learning/ICT Tools- Mobile App

Sl. No.	Name of Mobile App	About the App	Weblink	QR Code
1	**IVRI-Artificial Insemination App** 	❖ The IVRI-Artificial Insemination app designed and developed by ICAR-IVRI, Izatnagar in collaboration with ICAR-IASRI, New Delhi, is a hybrid App for Android platforms. ❖ The app is targeted to provide knowledge and enhance the skills of graduating veterinarians, field veterinary officers and paravets about various aspects related to heat detection & Artificial Insemination	https://play.google.com/store/apps/details?id=com.ivri.iasri.aiapp	
2	**IVRI- Vaccination Guide app** 	❖ The IVRI Vaccination Guide, designed and developed by ICAR-IVRI, Izatnagar in collaboration with ICAR-IASRI, New Delhi, is an offline App for Android platforms. ❖ The App provides basic information about vaccination in all the livestock species viz., Cattle & Buffaloes, Sheep & Goats, Pig, Horses, Camel, Mithun & Yak along with Poultry (Layers & Broilers) & Pets (Dogs & Cats).	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.vcguideapp	
3	**IVRI- Dairy Manager** 	❖ The IVRI-Dairy Manager designed and developed by ICAR-IVRI, Izatnagar in collaboration with NDRI, Karnal & ICAR-IASRI, New Delhi, is an offline App for Android platforms. ❖ The app is educational in nature and provides complete support for establishing a dairy farm and its effective management.	https://play.google.com/store/apps/details?id=com.ivri.iasri.dmapp	
4	**IVRI- Pig ration** 	❖ The IVRI- Pig Ration App is an offline App designed and developed by ICAR-IVRI, Izatnagar in collaboration with ICAR-NRC on Pig, Guwahati & ICAR-IASRI, New Delhi, for Android platforms. ❖ The app is targeted to impart and promote scientific knowledge and skills about balanced pig ration formulation.	https://play.google.com/store/apps/details?id=icar.iasri.ivri.pigration	
5	**IVRI-Waste Management Guide** 	❖ IVRI-Waste Management Guide App designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi ❖ This app is targeted to impart information and knowledge to graduating veterinarians, field vets, general public, farmers and other stakeholders about management of waste originating from agriculture, livestock and household activities	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.wmapp&hl=en	
6	**IVRI- Veterinary Clinical Care** 	❖ IVRI- Veterinary Clinical Care App, designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi ICAR-IVRI, Izatnagar ❖ This app is targeted to impart knowledge and skills to Graduating Veterinarians & Field Veterinary Officers about most frequent clinical conditions encountered in field conditions related to medicine (Mastitis, Bloat, TRP, Ketosis, Milk fever, Ruminal impaction & Calf diarrhoea), gynecology (Pyometra, Anestrus, Repeat Breeding, Dystocia, RFM, Uterine torsion, Uterine prolapse, Cervico-vaginal prolapse & COD) & surgery (Urolithiasis, Caesarean Section, Hernia, Castration, Fracture & Wound).	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.veterinaryclinicalcareapp&hl=en	
7	**IVRI-Zoonoses App** 	❖ IVRI- Zoonoses App designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi to providing basic information about important zoonotic infections including their modes of transmission, symptoms, prevention and control measures. ❖ This App will be useful to students of veterinary and medical degree programmes, practicing veterinarians, health care workers and general public.	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.zoonosesapp&hl=en	
8	**IVRI-Technology And services App** 	❖ IVRI- Technologies & Services App designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi is an inventory of important technologies developed by the ICAR-Indian Veterinary Research Institute which have been commercialized or are ready for commercialization along with the services provided by the Institute. ❖ The major objective of the app is to promote and showcase the information about important technologies their major features, utility, IPR status and inventors for its easy commercialization. ❖ The app mainly contains the technologies in the areas of Animal Health, Animal Feed, Animal Reproduction and Breeding, Animal Management; Surgical/Farm based equipments, Value Added Livestock Products and Miscellaneous technologies.	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.ivritechnologiesandservicesapp&hl=en	

Sl. No.	Name of Mobile App	About the App	Weblink	QR Code
9	**IVRI-Technology And services, in English** 	❖ IVRI- Technologies & Services App designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi is an inventory of important technologies developed by the ICAR-Indian Veterinary Research Institute which have been commercialized or are ready for commercialization along with the services provided by the Institute. ❖ The major objective of the app is to promote and showcase the information about important technologies such as the features, utility, IPR status and inventors for its easy commercialization.	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.ivritechnologiesandservicesapp&hl=en	
10	**IVRI-Disease Control, in English** 	❖ IVRI- Disease Control(रोग नवियंत्रण एप्प) App designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi ❖ This app is targeted to impart knowledge and skills to Graduating Veterinarians, Field Veterinary Officers, Paravets, Livestock, Poultry & Pet Owners about important diseases of Livestock, Poultry & dogs, their symptoms, diagnosis, treatment, Prevention & Control.	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.zoonosesapp&hl=en	
11	**IVRI-Zoonoses, in English** 	❖ IVRI-Zoonoses App designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi aims at providing basic information about important zoonotic infections including their modes of transmission, symptoms, prevention and control measures. ❖ The list of national disease control programmes w.r.t. zoonotic diseases has also been included along with the list of notifiable diseases in animals. ❖ This App will be useful to students of veterinary and medical degree programmes, practicing veterinarians, health care workers and general public.	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.zoonosesapp&hl=en	
12	**IVRI- Veterinary Clinical Care, in Hindi** 	❖ IVRI-Veterinary Clinical Care App designed and developed by ICAR-IVRI, Izatnagar & IASRI, New Delhi ❖ The app is targeted to impart knowledge and skills to Graduating Veterinarians & Field Veterinary Officers about most frequent clinical conditions encountered in field conditions related to medicine (Mastitis, Bloat, TRP, Ketosis, Milk fever, Ruminal impaction & Calf diarrhoea), gynaecology (Pyometra, Anestrus, Repeat Breeding, Dystocia, RFM, Uterine torsion, Uterine prolapse, Cervico- vaginal prolapse & COD) & surgery (Urolithiasis, Caesarean Section, Hernia, Castration, Fracture & Wound).	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.veterinaryclinicalcareapp&hl=en_IN	
13	**(Jaiv Suraksha) in English** 	❖ The Biosecurity and Biosafety app designed and developed by ICAR-IVRI, Izatnagar, UP and ICAR-IASRI, New Delhi ❖ This app is targeted to impart knowledge and skills to livestock and poultry farmers, field veterinarians and healthcare personnel about the concept of Biosecurity and Biosafety measures in Livestock and Poultry farms. ❖ This app covers the biosecurity and biosafety of dairy, pig and poultry farms. The various aspects covered under this app includes the basic concept of biosecurity and its advantages, detailed information about the measures pertaining to biosecurity and biosafety in farms	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.biosecuriy	
14	**IVRI-Antimicrobial Resistance (In English)** 	❖ Antimicrobial agents are considered miracle drugs, our leading weapons in the treatment of infectious diseases. The uncontrolled rise in resistant pathogens continues to threaten lives and strain the healthcare resources. ❖ Antimicrobial resistance (AMR) is the ability of microbes such as bacteria, viruses, parasites or fungi to grow in presence of chemicals that would normally kill it or limit its growth. ❖ This app attempts to shed light on the burning problem of AMR and highlight the various mechanisms through which AMR is acquired. ❖ Further, the app intends to educate various stakeholders and general public regarding the AMR problem with the ultimate aim of creating awareness.	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.amrapp	
15	**Animal Genetics & Breeding** 	❖ The IVRI-Animal Genetics and Breeding Tutorial App, designed and developed by ICAR-IVRI, Izatnagar, UP and IASRI, New Delhi is basically a Multiple-Choice Questions (MCQ) based Drill and Practice educational learning tool targeted to impart knowledge and skills to students in the area of Animal Genetics and Breeding. ❖ The app will be useful for the students enrolled in PG degree programmes in various Animal Genetics and Breeding disciplines in various universities and colleges across the country. It will also be useful for students preparing for various competitive exams. ❖ This app contains a total of 9 topics covering the entire gamut of the course. Each topic is divided into three difficulty levels with a set of questions in each; Level-I (Easy Questions), Level -II (Moderately Difficult Questions), Level-III (Difficult Questions). ❖ Students can use the app to assess their level of knowledge and competency in the course.	https://play.google.com/store/apps/details?id=com.icar.ivri.iasri.tutorialiv	
16	**Veterinary Surgery & Radiology** 	❖ The IVRI- Surgery and Surgery Tutorial App, designed and developed by ICAR-IVRI, Izatnagar, UP and IASRI, New Delhi is basically a Multiple-Choice Questions (MCQ) based Drill and Practice educational learning tool targeted to impart knowledge and skills to students in the area of Surgery and Radiology. ❖ The app will be useful for the students enrolled in PG degree programmes in various Surgery and Radiology disciplines in various universities and colleges across the country. It will also be useful for students preparing for various competitive exams. ❖ This App contains a total of 9 topics covering the entire gamut of the course. Each topic is divided into three difficulty levels with a set of questions in each. Level-1 (Easy Questions), Level -II (Moderately Difficult Questions), Level-III (Difficult Questions) ❖ Students can use the app to assess their level of knowledge and competency in the course	https://play.google.com/store/search?q=veterinary+surgery+and+radiology&c=apps	

Annexure-IV

IV. Dissemination and Outreach:

IV. Dissemination and Outreach	Apr'2018 to Mar'2023
5. No. of Posts on Social Media	NA
6. No. of Posts on Newspaper	10 during (2019-20),03 in (2020-21) and 04 in (2021-22)
7. No. of Posts on Magazines	NIL
8. No. of Unique Promotional or Outreach Collaterals	NA

Glimpse of newspaper:

हिन्दुस्तान बरेली • बुधवार • 07 नवंबर 2019 • 06

पर्यावरण के लिए करना होगा काम

बोले वैज्ञानिक

बरेली | प्रमुख संवाददाता

जलवायु परिवर्तन के कारण स्थानिक रोग प्रकोपों और वैश्विक महामारियों के अध्ययन के साथ ही वैश्विक स्वास्थ्य-रक्षा, खाद्य-सुरक्षा सुनिश्चित करने के लिए पशुधन के स्वास्थ्य और उत्पादकता की निगरानी करते रहना आवश्यक है।

इसके लिए इन विधाओं में शोधरत वैज्ञानिकों, आर्थिकी और योजनाकारों, राजनीतिज्ञों, नौकरशाहों तथा अन्य एजेन्सियों का आपस में मिलकर कार्य करना आवश्यक है। यह कहना था नेशनल इंस्टीट्यूट आफ हेल्थ बाल्टीमोर, अमेरिका की वैज्ञानिक डॉ प्रभा चन्द्रशेखरन का। वे भारतीय पशुचिकित्सा अनुसंधान संस्थान में अपने व्याख्यान स्वास्थ्य और अनुसंधान में पारविषयी प्रयास और चुनौतियां पर बोल रहे थे।

यह कार्यक्रम राष्ट्रीय कृषि उच्च शिक्षा परियोजना-विश्व बैंक द्वारा वित्तपोषित कास्ट परियोजना की ओर से आयोजित हुआ। संस्थान के लगभग 70 वैज्ञानिकों एवं छात्रों ने भाग लिया। डॉ प्रभा चन्द्रशेखरन ने बताया कि स्वास्थ्य एवं अच्छी उत्पादकता वाले पशुओं को प्राप्त करने को न केवल उत्कृष्ट पशुओं का प्रजनन बल्कि उन्हें उपयुक्त वातावरण प्रदान करते हेतु पर्यावरण के सभी घटकों का स्वास्थ्य होना आवश्यक है। वन हेल्थ अर्जित करने के तरीकों पर डॉ प्रभा ने बताया कि पारंपरिक तरीकों, शोध के बाद ईजाद किये गये तरीकों के साथ-साथ जनस्वास्थ्य के तरीके भी शामिल हों।

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बरेली महानगर

बरेली,7 नवम्बर 2019 3

पशुधन के स्वास्थ्य की कड़ी निगहबानी जरूरी : डॉ. प्रभा

अमर उजाला बरेली बरेली बृहस्पतिवार, 7 नवंबर 2019 8

अच्छे पशु पाने के लिए बेहतर पर्यावरण देने की जरूरत

बरेली। शहर के भारतीय पशु चिकित्सा अनुसंधान संस्थान में बुधवार को स्वास्थ्य और अनुसंधान में पारविषयी प्रयास और चुनौतियां विषय पर कार्यक्रम का आयोजन किया गया। कार्यक्रम में 70 वैज्ञानिकों व छात्रों ने हिस्सा लेकर विचार रखे। नेशनल इंस्टीट्यूट आफ हेल्थ, बाल्टीमोर, अमेरिका की वैज्ञानिक डॉ. प्रभा चन्द्र शेखरन ने कहाकि जलवायु परिवर्तन के कारण रोग प्रकोपों और वैश्विक महामारियों पर अध्ययन करने की जरूरत है। इसके अलावा वैश्विक स्वास्थ्य-रक्षा, खाद्य-सुरक्षा सुनिश्चित करने के लिए पशुधन के स्वास्थ्य और उत्पादकता की निगरानी जरूरी है। डा. प्रभा चन्द्र शेखरन ने कहा कि स्वस्थ्य व अच्छी उत्पादकता वाले पशुओं के लिए बेहतर पर्यावरण देने की जरूरत है। ब्यूरो

8 दैनिक जागरण बरेली, 7 नवंबर 2019

पानी और हवा हुई जहरीली, खोखला हो रहा शरीर

जासं, बरेली : प्रदूषण का स्तर लगातार बढ़ रहा है। हवा ही नहीं, पानी भी जहरीला हो चुका है। जो इंसान के शरीर को खोखला कर रहा है। यह बातें बुधवार को नेशनल इंस्टीट्यूट ऑफ हेल्थ, बाल्टीमोर, अमेरिका की वैज्ञानिक डॉ. प्रभा चंद्रशेखरन ने कहीं। वह यहां भारतीय पशुचिकित्सा अनुसंधान संस्थान में 'स्वास्थ्य और अनुसंधान में पारविषयी प्रयास और चुनौतियां' विषय पर आयोजित को संबोधित कर रहीं थीं।

डॉ. प्रभा ने बताया कि नाईजीरिया में पानी में सीसा होने के चलते हजारों बत्तखों की मौत हो गई। संगोष्ठी में पशु पोषण विभाग के प्रधान वैज्ञानिक डॉ. अशोक कुमार पटनायक आदि रहे।

7 बरेली

लखनऊ। बृहस्पतिवार ● 7 नवम्बर ● 2019

राष्ट्रीय सहारा | www.rashtriyasahara.com

पशुधन के स्वास्थ्य और उत्पादकता की निगरानी करना जरूरी

बरेली (एसएनबी)। जलवायु परिवर्तन के कारण स्थानिक रोग प्रकोपों और वैश्विक महामारियों के अध्ययन के साथ ही वैश्विक स्वास्थ्य-रक्षा, खाद्य-सुरक्षा सुनिश्चित करने के लिए पशुधन के स्वास्थ्य और उत्पादकता की निगरानी करते रहना आवश्यक है। यह विचार नेशनल इंस्टीट्यूट ऑफ हेल्थ, बाल्टीमोर, अमेरिका की वैज्ञानिक डा. प्रभा चन्द्रशेखरन ने भारतीय पशुचिकित्सा अनुसंधान संस्थान इज्जतनगर में अपने व्याख्यान स्वास्थ्य और अनुसंधान में पारविषयी प्रयास और चुनौतियाँ विषय पर बोलते हुए व्यक्त किये। यह कार्यक्रम राष्ट्रीय कृषि उच्च शिक्षा परियोजना-विश्व बैंक द्वारा वित्तपोषित कास्ट परियोजना की उप परियोजना पशुधन स्वास्थ्य हेतु उच्च केन्द्र द्वारा आयोजित की गयी। डा. प्रभा चन्द्रशेखरन ने बताया कि स्वास्थ्य एवं अच्छी उत्पादकता वाले पशुओं को प्राप्त करने हेतु न केवल उत्कृष्ट पशुओं का प्रजनन बल्कि उन्हें उपयुक्त वातावरण प्रदान करने हेतु पर्यावरण के सभी घटकों का स्वस्थ्य होना आवश्यक है। समग्र स्वास्थ्य अर्जित करने के तरीकों पर डा. प्रभा ने बताया कि पारंपरिक तरीकों, शोध करने के बाद ईजाद किये गये तरीकों के साथ-साथ जनस्वास्थ्य के तरीकों को भी सम्मिलित किये जाने की आवश्यकता है। कार्यक्रम का संचालन एवं धन्यवाद ज्ञापन पशु पोषण विभाग के प्रधान वैज्ञानिक डा. अशोक कुमार पटनायक द्वारा किया गया। इस अवसर पर डा. ए.के. तिवारी, डा. अवध बिहारी पाण्डे, डा. डी.के. सिंह, डा. बब्लू कुमार, डा. हिमानी धान्जे सहित विभिन्न विभागों के वैज्ञानिक एवं छात्र उपस्थित थे।

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बरेली महानगर

बरेली,19 नवम्बर 2019 3

आईवीआरआई में हिन्दी उन्मुखीकरण कार्यशाला का उद्घाटन

बरेली (आज समाचार सेवा)। पशुचिकित्सा विज्ञान के दक्षिण भारतीय एवं हिन्दी भाषी छात्रों को हिन्दी भाषा में कौशल विकास के लिए भारतीय पशुचिकित्सा अनुसंधान संस्थान, इज्जतनगर में आज एक दो दिवसीय हिन्दी उन्मुखीकरण कार्यशाला का उद्घाटन संपन्न हुआ। यह कार्यशाला विश्व बैंक एवं भारतीय कृषि अनुसंधान परिषद, नई दिल्ली द्वारा वित्तपोषित राष्ट्रीय कृषि एवं उच्च शिक्षा परियोजना के लिए उन्नत कृषि विज्ञान एवं तकनीकी केन्द्र (कास्ट) व पशु स्वास्थ्य हेतु उन्नत केन्द्र (ए.सी.एल.एच.) द्वारा आयोजित की गयी है जिसमें परास्नातक एवं पी.एच.डी. के लगभग 80 छात्र प्रतिभागिता कर रहे हैं। कार्यशाला का उद्घाटन करते हुए संस्थान के संयुक्त निदेशक (शैक्षणिक) एवं कास्ट परियोजना के नोडल अधिकारी डॉ. त्रिवेणी दत्त ने कहा कि इस कार्यशाला का आयोजन भारत के विभिन्न व्यवसायिक क्षेत्रों में हिन्दी के बढ़ते हुए प्रयोग को ध्यान में रख कर छात्रों के कौशल विकास के लिए किया जा रहा है। कास्ट के प्रधान अन्वेषक डॉ. अशोक कुमार तिवारी ने कार्यशाला की रूप रेखा पर बताया कि इसके अन्तर्गत एक एडवांस कार्यशाला का आयोजन भी किया जायेगा। कार्यशाला के विभिन्न सत्रों में दैनिक जीवन व राष्ट्रीय परिदृश्य में हिन्दी का महत्व पर डॉ. अंशुक शर्मा, छात्रों के लिए हिन्दी ज्ञान परिचय हेतु प्रश्नावली पर डॉ॰ कौशलेन्द्र सिंह, वर्तनी ज्ञान तथा हिन्दी वाक्य निर्माण पर डॉ. गोविन्द दीक्षित, दैनिक जीवन में प्रयुक्त आम बोल-चाल के शब्दों तथा वाक्यों पर विचार-विमर्श पर डॉ. संजीव मेहरोत्रा, डॉ. मोहिनी सैनी आदि ने अपने-अपने व्याख्यान दिये। उद्घाटन सत्र में प्रतिभागी छात्रों के अतिरिक्त डा. रूपसी तिवारी, डा. वी.बी. चतुर्वेदी सहित बड़ी संख्या में वैज्ञानिक, अधिकारी और कर्मचारी उपस्थित रहे। समारोह का संचालन राजभाषा अनुभाग की प्रभारी श्रीमती सुजाता जेठी ने किया।

6 दैनिक जागरण बरेली, 19 नवंबर 2019

दक्षिण भारतीय छात्र छात्र पढ़ेंगे हिंदी

बरेली : भारतीय पशु चिकित्सा अनुसंधान संस्थान में सोमवार को एक दिवसीय हिंदी विकास कार्यशाला का आयोजन हुआ। इसमें संस्थान के उन छात्रों ने शिरकत की जो दक्षिण भारत या अहिंदी भाषा क्षेत्र से आते हैं। इन छात्रों को संस्थान के संयुक्त निदेशक (शैक्षणिक) व कास्ट परियोजना के नोडल अधिकारी डॉ. त्रिवेणी दत्त ने हिन्दी के महत्व की जानकारी दी। डॉ. अशोक कुमार तिवारी, डॉ. अंशुक शर्मा, डॉ. कौशलेन्द्र सिंह, डॉ. गोविंद दीक्षित, डॉ. संजीव मेहरोत्रा, डॉ. मोहिनी सैनी आदि मौजूद रहे।

07 • बरेली • मंगलवार • 19 नवंबर 2019 • हिन्दुस्तान

अहिन्दी भाषी छात्रों को दिया हिन्दी का प्रशिक्षण

आईवीआरआई

बरेली | हिन्दुस्तान संवाद

पशुचिकित्सा विज्ञान के दक्षिण भारतीय एवं अहिन्दी भाषी छात्रों को हिन्दी भाषा का प्रशिक्षण दिया गया। ● हिन्दुस्तान

पशुचिकित्सा विज्ञान के दक्षिण भारतीय एवं अहिन्दी भाषी छात्रों को हिन्दी भाषा में कौशल विकास के लिए भारतीय पशुचिकित्सा अनुसंधान संस्थान, इज्जतनगर में दो दिवसीय हिन्दी उन्मुखीकरण कार्यशाला का उद्घाटन हुआ। कार्यशाला विश्व बैंक एवं भारतीय कृषि अनुसंधान परिषद से फंडेड है। राष्ट्रीय कृषि एवं उच्च शिक्षा परियोजना के लिए उन्नत कृषि विज्ञान एवं तकनीकी केन्द्र (कास्ट) की ओर से यह आयोजित हुई। इसमें परास्नातक एवं पीएचडी के लगभग 80 छात्र प्रतिभागिता कर रहे हैं।

संस्थान के संयुक्त निदेशक (शैक्षणिक) एवं कास्ट परियोजना के नोडल अधिकारी डॉ त्रिवेणी दत्त ने कहा कि इस कार्यशाला भारत के विभिन्न व्यवसायिक क्षेत्रों में हिन्दी के बढ़ते प्रयोग को ध्यान में रखकर छात्रों के कौशल विकास के लिए करवाई जा रही है। कास्ट के प्रधान अन्वेषक डॉ अशोक ने कार्यशाला की रूप रेखा पर बताया कि इसके अन्तर्गत एक एडवांस कार्यशाला भी होगी। विभिन्न सत्रों में दैनिक जीवन व राष्ट्रीय परिदृश्य में हिन्दी का महत्व पर डॉ अंशुक शर्मा, छात्रों के लिए हिन्दी ज्ञान परिचय हेतु प्रश्नावली पर डॉ कौशलेन्द्र सिंह, वर्तनी ज्ञान तथा हिन्दी वाक्य निर्माण पर डॉ गोविन्द, दैनिक जीवन में प्रयुक्त आम बोल-चाल के शब्दों तथा वाक्यों पर विचार-विमर्श पर डॉ. संजीव, डॉ.मोहिनी सैनी ने व्याख्यान दिए। संचालन राजभाषा अनुभाग की प्रभारी सुजाता ने किया।

ePaper

हिन्दुस्तान

आईवीआरआई में देशभर के नामी वैज्ञानिक जुटे

बरेली। भारतीय कृषि अनुसंधान परिषद और उच्च शिक्षा परियोजना के तहत मंगलवार को आईवीआरआई कैंपस में बायोसेफ्टी एंड बायोसेक्युरिटी इन एनीमल साइंस रिसर्च एंड डेवलपमेंट विषय पर कार्यशाला हुई जिसमें देश के नामी वैज्ञानिकों ने व्याख्यान दिए। संस्थान के संयुक्त निदेशक शोध डा. बीपी मिश्रा ने बताया कि कास्ट परियोजना की ओर से छात्रों और प्रयोगशाला में काम करने वाले कर्मियों की दक्षता बढ़ाने को उल्लेखनीय कार्य किया जा रहा है। पूर्व में संस्थान का अंश रहे राष्ट्रीय उच्च सुरक्षा पशु रोग संस्थान, भोपाल में देश का सर्वोत्तम प्रयोगशाला स्थापित करने का उद्देश्य भी जैव सुरक्षा ही था। कास्ट परियोजना के प्रधान अन्वेषक डा. एके तिवारी ने परियोजना के बारे में बताया।

4 वीर अर्जुन, लखनऊ, 6 नवम्बर, 2019

कृत्रिम बुद्धिमत्ता का पशु विज्ञान में उपयोग विषय पर आईवीआरआई में जुटे वैज्ञानिक

रवि सक्सेना

बरेली। भारतीय पशुचिकित्सा अनुसंधान संस्थान (आईवीआरआई), इज्जतनगर में कृत्रिम बुद्धिमत्ता का पशु विज्ञान में उपयोग विषय पर राष्ट्रीय कार्यशाला का आयोजन किया गया जिसमें 300 वैज्ञानिकों एवं छात्रों ने प्रतिभागिता की। यह कार्यक्रम राष्ट्रीय कृषि उच्च शिक्षा परियोजना-विश्व बैंक द्वारा वित्तपोषित कास्ट परियोजना की उप परियोजना पशुधन स्वास्थ्य हेतु उच्च केन्द्र द्वारा आयोजित किया गया। इस अवसर पर संस्थान के निदेशक एवं कुलपति डा. राजकुमार सिंह ने कृत्रिम बुद्धिमत्ता का जनसामान्य के जीवन मे दिन-प्रतिदिन बढते महत्व को रेखांकित करते हुए इसे वैज्ञानिकों और छात्रों को सीखने के लिए प्रोत्साहित किया। उन्होंने इसे भविष्य की प्रौद्योगिकी बताया। कास्ट परियोजना के नोडल अधिकारी एवं संयुक्त निदेशक, शैक्षणिक डा. त्रिवेणी दत्त ने कास्ट परियोजना की जानकारी देते हुए बताया कि इसके तहत ड्रोन प्रौद्योगिकी, इमेज प्रोसेसिंग आदि द्वारा वैज्ञानिक एवं शोधकर्त्ता पशु स्वास्थ्य और उनकी उत्पादकता मे वृद्धि कर सकते है। उन्होने कहा कि हम परियोजना के तहत वैज्ञानिकों एवं छात्रों को विभिन्न तकनीकों को सीखने के लिए विदेश भेजेंगे, इससे प्रधानमंत्री के सन् 2022 तक किसानों की आय दोगुना करने मे सहायता मिलेगी। इस अवसर पर दो तकनीकी सत्र आयोजित किये गये। प्रथम सत्र की अध्यक्षता संस्थान के संयुक्त निदेशक शोध डा. बी.पी.मिश्रा तथा संयोजन वरिष्ठ वैज्ञानिक डा. अमित कुमार ने किया। इसके अन्तर्गत भारतीय कृषि साख्यिकी शोध संस्थान, नई दिल्ली के प्रधान वैज्ञानिक एवं कम्प्यूटर अनुप्रयोग विभाग के विभागाध्यक्ष डा. सुदीप मारवाह ने कृत्रिम बुद्धिमत्ता द्वारा इमेज एनालाइसिस, राष्ट्रीय डेयरी अनुसंधान संस्थान, करनाल के प्रधान वैज्ञानिक डा. टी.के. मोहंती ने डेयरी के गाय एवं भैसो मे उचित ताप एवं धनैला रोग के पता लगाने मे कृत्रिम बुद्धिमत्ता के प्रयोग पर अपना व्याख्यान दिया।

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बरेली महानगर

बरेली,6 नवम्बर 2019 2

पशु स्वास्थ्य और उनकी उत्पादकता जरूरी : डॉ. सिंह

बरेली (आज समाचार सेवा)। आज भारतीय पशुचिकित्सा अनुसंधान संस्थान में कृत्रिम बुद्धिमत्ता का पशु विज्ञान में उपयोग विषय पर एकदिवसीय राष्ट्रीय कार्यशाला का आयोजन किया गया जिसमें 300 वैज्ञानिकों एवं छात्रों ने प्रतिभागिता की। यह कार्यक्रम राष्ट्रीय कृषि उच्च शिक्षा परियोजना-विश्व बैंक द्वारा वित्तपोषित कास्ट परियोजना की उप परियोजना पशुधन स्वास्थ्य हेतु उच्च केन्द्र द्वारा आयोजित की गयी। अपने अध्यक्षीय भाषण में संस्थान के निदेशक एवं कुलपति डा. राजकुमार सिंह ने कृत्रिम बुद्धिमत्ता जनदिन-प्रतिदिन जनसामान्य के जीवन में बढ़ते महत्व को रेखांकित करते हुए इसे वैज्ञानिकों और छात्रों को सीखने के लिए प्रोत्साहित किया। उन्होंने इसे भविष्य की प्रौद्योगिकी बताया। कास्ट परियोजना के नोडल अधिकारी एवं संयुक्त निदेशक, शैक्षणिक डा. त्रिवेणी दत्त ने संक्षेप में कास्ट परियोजना की जानकारी देते हुए बताया कि इसके तहत ड्रोन प्रौद्योगिकी, इमेज प्रोसेसिंग आदि द्वारा वैज्ञानिक एवं शोधकर्ता पशु स्वास्थ्य और उनकी उत्पादकता में वृद्धि कर सकते हैं। उन्होंने कहा कि हम परियोजना के तहत वैज्ञानिकों एवं छात्रों को विभिन्न तकनीकों को सीखने के लिए विदेश भेजेंगे, इससे प्रधानमंत्री के सन् 2022 तक किसानों की आय दोगुना करने में सहायता मिलेगी। इस अवसर पर दो तकनीकी सत्र आयोजित किये गये। प्रथम सत्र की अध्यक्षता संस्थान के संयुक्त निदेशक शोध डा. बी.पी. मिश्रा तथा संयोजन वरिष्ठ वैज्ञानिक डा. अमित कुमार ने किया। इसके अन्तर्गत भारतीय कृषि सांख्यिकी शोध संस्थान, नई दिल्ली के प्रधान वैज्ञानिक एवं कम्प्यूटर अनुप्रयोग विभाग के विभागाध्यक्ष डा. सुदीप मारवाह ने कृत्रिम बुद्धिमत्ता द्वारा इमेज एनालाइसिस, राष्ट्रीय डेयरी अनुसंधान संस्थान, करनाल के प्रधान वैज्ञानिक डा. टी.के. मोहंती ने डेयरी के गाय एवं भैसो में उचित ताप एवं धनैला रोग के पता लगाने में कृत्रिम बुद्धिमत्ता के प्रयोग पर अपना व्याख्यान दिया। कास्ट परियोजना की जानकारी देते हुए बताया कि इसके तहत ड्रोन प्रौद्योगिकी, इमेज प्रोसेसिंग आदि द्वारा वैज्ञानिक एवं शोधकर्ता पशु स्वास्थ्य और उनकी उत्पादकता में वृद्धि कर सकते हैं। उन्होंने कहा कि हम परियोजना के तहत वैज्ञानिकों एवं छात्रों को विभिन्न तकनीकों को सीखने के लिए विदेश भेजेंगे, इससे प्रधानमंत्री के सन् 2022 तक किसानों की आय दोगुना करने में सहायता मिलेगी। इस अवसर पर दो तकनीकी सत्र आयोजित किये गये। प्रथम सत्र की अध्यक्षता संस्थान के संयुक्त निदेशक शोध डा. बी.पी. मिश्रा तथा संयोजन वरिष्ठ वैज्ञानिक डा. अमित कुमार ने किया। इसके अन्तर्गत भारतीय कृषि सांख्यिकी शोध संस्थान, नई दिल्ली के प्रधान वैज्ञानिक एवं कम्प्यूटर अनुप्रयोग विभाग के विभागाध्यक्ष डा. सुदीप मारवाह ने कृत्रिम बुद्धिमत्ता द्वारा इमेज एनालाइसिस, राष्ट्रीय डेयरी अनुसंधान संस्थान, करनाल के प्रधान वैज्ञानिक डा. टी.के. मोहंती ने डेयरी के गाय एवं भैसो में उचित ताप एवं धनैला रोग के पता लगाने में कृत्रिम बुद्धिमत्ता के प्रयोग पर अपना व्याख्यान दिया।

अधिकारी एवं संयुक्त निदेशक, शैक्षणिक डा. त्रिवेणी दत्त ने संक्षेप में कास्ट परियोजना की जानकारी देते हुए बताया कि इसके तहत ड्रोन प्रौद्योगिकी, इमेज प्रोसेसिंग आदि द्वारा वैज्ञानिक एवं शोधकर्ता पशु स्वास्थ्य और उनकी उत्पादकता में वृद्धि कर सकते हैं। उन्होंने कहा कि हम परियोजना के तहत वैज्ञानिकों एवं छात्रों को विभिन्न तकनीकों को सीखने के लिए विदेश भेजेंगे, इससे प्रधानमंत्री के सन् 2022 तक किसानों की आय दोगुना करने में सहायता मिलेगी। इस अवसर पर दो तकनीकी सत्र आयोजित किये गये। प्रथम सत्र की अध्यक्षता संस्थान के संयुक्त निदेशक, शोध डा. बी.पी. मिश्रा तथा संयोजन वरिष्ठ वैज्ञानिक डा. अमित कुमार ने किया। इसके अन्तर्गत भारतीय कृषि सांख्यिकी शोध संस्थान, नई दिल्ली के प्रधान वैज्ञानिक एवं कम्प्यूटर अनुप्रयोग विभाग के विभागाध्यक्ष डा. सुदीप मारवाह ने कृत्रिम बुद्धिमत्ता द्वारा इमेज एनालाइसिस, राष्ट्रीय डेयरी अनुसंधान संस्थान, करनाल के प्रधान वैज्ञानिक डा. टी.के. मोहंती ने डेयरी के गाय एवं भैसो में उचित ताप एवं धनैला रोग के पता लगाने में कृत्रिम बुद्धिमत्ता के प्रयोग पर अपना व्याख्यान दिया।

आईवीआरआई में वेबिनार, विशेषज्ञों ने कोरोना पर जताई चिंता

बरेली। भारतीय पशु चिकित्सा अनुसंधान संस्थान (आईवीआरआई) में कोरोना महामारी पर वेबिनार का आयोजन हुआ। इसमें अमेरिका के मिसिसिपी विश्वविद्यालय में सह प्राध्यापक डॉ. रितेश टंडन ने कहा कि कोरोना से बचाव के लिए कई देश टीका बनाने का प्रयास कर रहे हैं। उन्होंने कहा कि दो सितंबर तक दुनिया भर में 2.59 करोड़ से ज्यादा लोग संक्रमित हो चुके हैं। कोरोना वायरस महामारी फैलाने का बहुत सूक्ष्म और खतरनाक वायरस है। इस सेमिनार में कई देशों के विशेषज्ञ शामिल हुए। संस्थान के निदेशक डॉ. बीपी मिश्र ने भी अपने विचार रखे। ब्यूरो

मोबाइल एप बताएगा पशुओं के उपचार के उपाय

जागरण संवाददाता, बरेली : अब वेटनरी की पढ़ाई करने वाले छात्र-छात्राओं से लेकर पशु चिकित्सकों एवं इस क्षेत्र से जुड़े लोगों को पशुओं में होने वाली बीमारी के लक्षण, उसके उपाय सहित तमाम जानकारियां अब मोबाइल पर ही मिल जाएंगी। इसके अलावा भारतीय पशु चिकित्सा अनुसंधान संस्थान (आइवीआरआइ) द्वारा विकसित सभी तकनीकों और मिलने वाली सुविधाओं के बारे में भी जान सकेंगे। इसके लिए आइवीआरआइ ने बुधवार को 131वें स्थापना दिवस समारोह के मौके पर दो मोबाइल एप लांच किए। ऑनलाइन समारोह में दो नई तकनीकि भी रिलीज कीं। कार्यक्रम के मुख्य अतिथि के रूप में भारतीय कृषि अनुसंधान परिषद (आइसीएआर) के निदेशक डॉ. त्रिलोचन महापात्रा मौजूद रहे।

आइवीआरआइ वेटनरी क्लीनिकल केयर एप : यह एप गूगल प्ले स्टोर पर उपलब्ध है। इसे डाउन लोड करना होगा। प्रधान वैज्ञानिक एवं कृषि प्रौद्योगिकी सूचना केंद्र की प्रभारी डॉ. रूपसी तिवारी के नेतृत्व में बने इस एप में पशुओं में होने वाली प्रजनन, सर्जरी संबंधी बीमारी और उसे दूर करने के लिए उपयोग में लाई जाने वाली दवाओं की जानकारी मिलेगी। पशुओं के बीमार होने पर रोग के लक्षण, क्या उपचार किया जाए, कब-कब उसे टीके लगने हैं? कितनी डोज देनी है? यह सब जानकारी एप में मिलेगी। लोगों की जरूरत के लिए एक हेल्पलाइन नंबर भी दिया गया है।

आइवीआरआइ-टेक्नोलॉजी एंड सर्विसेज एप : इस एप में आइवीआरआइ की ओर से अब तक तैयार की गईं प्रमुख टेक्नोलॉजी और सेवाओं की जानकारी मिलेगी। एप में संस्थान की ओर से अब तक कॉमर्शियल की जा चुकीं सभी टेक्नोलॉजी, तैयार की गईं प्रजातियों, डायग्नोस्टिक, क्लीनिकल, वैक्सीन टेस्टिंग व टेक्नोलॉजी प्रोडेक्शन की पूरी डिटेल है। यह एप संयुक्त निदेशक एकेडमिक डॉ. त्रिवेणी दत्त की निगरानी में तैयार किया गया है।

आइवीआरआइ ने लांच किया वेटरनरी क्लीनिकल केयर एप ● साभार इंटरनेट मीडिया

131वें स्थापना दिवस पर भारतीय पशु चिकित्सा अनुसंधान संस्थान ने लांच किए दो मोबाइल एप और नई टेक्नोलॉजी

किलनी से निजात देगी एंटी टिक फाइटो फार्मुलेशन हर्बल दवा: आइवीआरआइ के परजीवी विज्ञान विभाग ने लखनऊ के नेशनल बॉटनिकल रिसर्च इंस्टीट्यूट (एनबीआरआइ) के साथ मिलकर 'एंटी टिक फाइटो फार्मुलेशन' हर्बल दवा तैयार की है। इसकी टेक्नोलॉजी स्थापना दिवस पर रिलीज की गई।

कम्युनिकेशन सिस्टम को मजबूत करें संस्थान- डॉ. महापात्रा: स्थापना दिवस पर मुख्य अतिथि आइसीएआर के महानिदेशक डॉ. त्रिलोचन महापात्रा ने पशु चिकित्सा दैहिकी एवं जलवायुकी विभाग के 50 वर्ष पूरे होने पर स्वर्ण जयंती एवं उच्च प्रशिक्षण केंद्र के 25 साल पूरे होने पर रजत जयंती स्तंभ का अनावरण किया। कहा कि अब संस्थान को वैश्विक पशु स्वास्थ्य प्रबंधन से जुड़ी चुनौतियों पर कार्य करके नया आयाम स्थापित करना होगा। किसानों तक नई तकनीक पहुंचाएं। कार्यक्रम में सीएआरआइ के उप महानिदेशक डॉ. बीएन त्रिपाठी, आइवीआरआइ के निदेशक डॉ. बीपी मिश्रा, विज्ञानी सलाहकार डॉ. सत्यवीर सिंह मलिक, जेडी एकेडमिक डॉ. त्रिवेणी दत्त, दैहिकी एवं जलवायुकी विभाग की हेड डॉ. जी तरू शर्मा, सीएआरआइ के निदेशक डॉ. संजीव कुमार आदि शामिल हुए।

नौकरी की बजाए रोजगार देने के काबिल बनाए जा रहे छात्र

आईवीआरआई

बरेली। प्रमुख संवाददाता

भारतीय पशुचिकित्सा अनुसंधान संस्थान (आईवीआरआई) युवा वैज्ञानिकों को उद्यमिता के भी गुर सिखा रहा है। उनकी काबिलियत को कुछ इस तरह से निखारा जा रहा है ताकि वे पढ़ाई पूरी करने के बाद नौकरी खोजने की बजाय नौकरी देने के लायक भी बन सकें। इसके लिए 24 छात्रों को विदेशों की हाईटेक प्रयोगशालाओं में ट्रेनिंग के लिए भेजा गया। आईवीआरआई को सेंटर ऑफ एडवांस एग्रीकल्चरल साइंस एंड टेक्नोलॉजी (कास्ट) के तहत प्रोजेक्ट मिला है और इसी के तहत यहां स्किल डेवलपमेंट पर काम चल रहा है। यही नहीं नई वैक्सीन और डायग्नोस्टिक भी विकसित की जा रही है। सेंटर ऑफ एडवांस एग्रीकल्चरल साइंस एंड टेक्नोलॉजी के तहत आईवीआरआई को लाइव स्टॉक के क्षेत्र में छात्रों और वैज्ञानिकों की स्किल को बढ़ाने के लिए यह प्रोजेक्ट दिया गया है। 20 लाख रुपये का ये प्रोजेक्ट अगले साल खत्म हो रहा है। कास्ट के प्रिंसिपल इनवेस्टीगेटर (पीआई) प्रधान वैज्ञानिक डॉ. एके तिवारी ने बताया कि यह पूरा प्रोजेक्ट स्टूडेंट सेंट्रिक है। इसमें उनकी ज्ञान

वृद्धि और उनमें उद्यमिता विकास की क्षमताएं विकसित की जा रही हैं। संस्थान में 24 छात्रों को अमेरिका, स्पेन, नार्वे, यूके और नीदरलैंड की प्रयोगशालाओं में ट्रेनिंग लेने भेजा है। 20 छात्र ट्रेनिंग पूरी कर चुके हैं। इसमें सभी मास्टर ऑफ वेटरनरी साइंसेज (एमवीएससी) और पीएचडी के स्कॉलर है। डॉ. एके तिवारी ने बताया कि इन छात्रों को तीन महीने की ट्रेनिंग दिलाई गई है और इससे उनकी क्षमताओं में बढ़ोत्तरी हुई है। डॉ. तिवारी ने कहा कि जो युवा वैज्ञानिक निकलेंगे उनमें काबिलियत कूट भरी होगी। इस प्रोजेक्ट में आईवीआरआई के 44 वैज्ञानिक भी शामिल हैं।

विदेश में ट्रेनिंग, डायग्नोस्टिक हो रही है तैयार

बरेली। आईवीआरआई के निदेशक डॉ. बीपी मिश्रा ने बताया कि यह प्रोजेक्ट 20 करोड़ रुपये का है। इसमें अब तक 12 मोबाइल एप विकसित किए जा चुके हैं। साथ ही वैक्सीन और डायग्नोस्टिक पर काम चल रहा है। इसमें ऐसी वैक्सीन तैयार की जा रही है कि जो दो-दो बीमारियों के लिए प्रोटेक्शन दे सकेंगी। एफएमडी के लिए थर्मो टॉलरेंट वैक्सीन पर काम किया रहा है। दरअसल, एफएमडी की वैक्सीन फील्ड में तापमान के उतार चढ़ाव के कारण कई बार बेअसर हो सकती है, ऐसे में थर्मोटालरेंट वैक्सीन कोल्डचेन टूटने के बाद भी कुछ समय के लिए अपना प्रभाव कम नहीं होने देगी। इसके अलावा एफएमडी (खुरपका-मुंहपका) के लिए डायग्नोस्टिक किट तैयार की जा रही है।

> कास्ट के इस प्रोजेक्ट पर 44 वैज्ञानिक काम कर रहेहैं। यह प्रोजेक्ट स्टूडेंट की क्षमता को बढ़ाने को तैयार किया गया है। उनको विदेशों में प्रशिक्षण के लिए भेजा जा रहा है ताकि युवा वैज्ञानिकों की स्किल में बढ़ोत्तरी हो सके। कई वैक्सीन और डायग्नोस्टिक भी वैज्ञानिक तैयार कर रहे हैं। डॉ. बीपी मिश्रा, निदेशक,आईवीआरआई

JAMMU | earlyTIMES
Explaining Truth Believe in Possibilities

VC SKUAST delivers distinguished lecture

EARLY TIMES REPORT

JAMMU, Aug 4: Prof. J.P. Sharma, Vice Chancellor, SKUAST-Jammu and SKUAST-Kashmir delivered a distinguished lecture on 'Agripreneurship for Atmanirbhar Bharat' under the Distinguished Lecture Series of the World Bank Funded NAHEP project entitled "CAAST-Advanced Centre for Livestock Health" of ICAR-Indian Veterinary Research Institute, Izatnagar, U.P.

While inaugurating the programme Dr Triveni Dutt, Director and Vice Chancellor of ICAR-IVRI welcomed the esteemed speaker Dr J.P Sharma. He highlighted the importance of this lecture in the current scenario and emphasized on promotion of agripreneurship in the country for fulfilling the mission of Atmanirbhar Bharat. Lecture was attended by large no of Scientists, Scholars, entrepreneurs across the nation. During his lecture Prof Sharma emphasized that the entrepreneurship development in agriculture will pave the path of Atma Nirbhar Bharat.

Dr Sharma informed that agriculture is the primary source of livelihood for about 58 per cent of India's population. The share of agriculture in gross domestic product (GDP) has reached almost 20 per cent for the first time in the last 17 years, making it the sole bright spot in GDP performance during 2020-21.The resilience of the farming community in the face of adversities posed by COVID pandemic made agriculture the only sector to have clocked a positive growth of 3.4 per cent at constant prices in 2020-21, when other sectors slid. He lauded farmers for the continuous supply of agricultural commodities, especially staples like rice, wheat, pulses and vegetables during pandemic that enabled food security. Despite various challenges, India's food grain production is estimated to rise 2.66 per cent to be a new record of 305.43 million tons in the current crop year 2020-21. Prof Sharma elaborated that "When agriculture move forward in the form of industry, agripreneurship opportunities are going to be created in the rural areas on a large scale." This will create employment opportunities in the rural areas and our educated youth will get jobs in rural areas.

He further briefed that there are ample opportunities of entrepreneurship development in agriculture and allied sectors viz. apiculture, mushroom cultivation, dairying, floriculture, fishery, horticulture, floriculture. He urged on diversification of horticulture in hilly areas of J&K. He also informed that horticulture crops such as such as saffron, apple, dry fruits and kala zeera fetches high market price in national and international market. He urged the rural youth for coming forward in the field of entrepreneurship for self-employment and income generation.

VC SKUAST Prof. JP Sharma.

Dr J P Sharma appraised that country has achieved self sufficiency in food grain production and now extension functionaries should focus on extension beyond production. He urged on processing, value addition, branding, packaging and marketing of commodities especially milk and milk products, vegetables and fruits where the losses are high and due to losses the value of the these commodities declines sharply. Prof. Sharma emphasized that the Farmers' Producers' Organizations (FPOs) can help the farmers to realize the price of their produce. He also urged the farmers and youths to come forward for starting the food processing units. Besides, he emphasized on developing marketing intelligence among farmers for better realization of their produce. He also regarded the skill development and ARYA as the major schemes of Government of India which can make the rural youth as entrepreneurs. Dr. Sharma also enumerated some case studies of successful entrepreneurs of UT of J&K and other states of India during his informative lecture.

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IVRI Disease Control App: पशुपालकों के काम की खबर, किन रोगों से पीड़ित है पशु? बताएगा ये ऐप

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IVRI Disease Control App: भारत में किसान अपने जीवनयापन के लिए खेती के बाद सबसे ज्यादा पशुपालन पर ही निर्भर रहते हैं. सरकार की तरफ से भी इसको लेकर किसानों को लगातार प्रोत्साहित किया जा रहा है. लेकिन बीमारी के कारण पशुओं की मौत होने से पशुपालकों को आर्थिक तौर पर काफी नुकसान होता है. हालांकि, कुछ राज्य सरकारें पशुओं की मौत पर किसानों को मुआवजा देने का भी काम कर रही हैं.

लक्षणों के आधार पर पशुओं की बीमारी बताएगा ये ऐप

इंसानों की तरह पशु भी तमाम तरह की रोगों से ग्रसित होते रहते हैं. अक्सर पशुपालक इन रोगों को पहचान नहीं पाते हैं. ऐसी स्थिति से बचने के लिए भारतीय कृषि अनुसंधान परिषद (ICAR) के IVRI Disease Control App की सहायता ली जा सकती है. ये ऐप लक्षणों के आधार पर पशुओं में होने वाली बीमारी और उससे बचने के उपाय के बारे में जानकारी प्रदान करता है

कहां से करें डाउनलोड?

पशुपालक इस ऐप को अपने मोबाइल में गूगल प्ले स्टोर से डाउनलोड कर सकते हैं. इस ऐप से आप घर बैठे ही पशुओं में दिख रहे लक्षणों के आधार पर बीमारी के बारे में जान सकते हैं. ये ऐप फिलहाल हिंदी और अंग्रेजी दो भाषाओं में उपलब्ध है.

क्या हैं सुविधाएं?

> लक्षणों को आधार पर रोगों के बारे में जानकारी
> इन बीमारियों के निदान के लिए प्रयोगशालाओं की जानकारी
> रोगों के रोकथाम के लिए सरकारी योजनाएं
> पशुओं के टीकाकरण के बारे में जानकारी
> डिसीज कंट्रोल से जुड़े महत्वपूर्ण संगठनों के बारे में जानकारी

पशुपालकों के लिए ये ऐप काफी उपयोगी साबित हो सकता है. दरअसल, पशु थनैला, अफरा/रूमिनल टिम्पेनी, ट्रोमेटिक रेटिकुलो पेरिटोनाइटिस कीटोसिस, दुग्ध ज्वर, रूमिनल, इम्पेशन जैसे कई बीमारियों से ग्रसित हो जाते हैं. इंसानों की तरह पशु अपनी परेशानियां दूसरों से साझा नहीं कर सकते हैं. ऐसी स्थिति में ये ऐप पशुपालकों को पशुओं को लेकर जागरूक करेगा. जिससे किसान अपने पशुओं को बीमारियों से बचा सकेंगे. इस ऐप में दी जा रही सुविधाओं के बारे में अधिक जानकारी के लिए किसान भाई IVRI के हेल्पलाइन नंबर 05812311111 पर भी कॉल कर सकते हैं.

- UP: किसानों के लिए जरूरी खबर, धान खरीद के रजिस्ट्रेशन से पहले आधार से लिंक करा लें मोबाइल नंबर
- स्ट्रॉबेरी की खेती ने बदली इस महिला किसान की किस्मत, 6 लाख की लागत से 30 लाख तक मुनाफा

सम्मानित हुईं महिला वैज्ञानिक और कर्मचारी

संवाद न्यूज एजेंसी

बरेली। आईसीएआर/ आईवीआरआई के संयुक्त तत्वाधान में मंगलवार को अंतरराष्ट्रीय महिला दिवस मनाया गया। इस दौरान महिला सशक्तीकरण रैली, पौधरोपण और अभिनंदन, क्विज प्रतियोगिता हुई। संस्थान में कार्यरत महिला वैज्ञानिकों, कर्मचारियों को सम्मानित किया गया। निदेशक डॉ. त्रिवेणी दत्त ने समाज में महिलाओं की मां, बेटी, अधिकारी, गृहिणी के तौर पर सेवाओं को सराहा।

संयुक्त निदेशक प्रसार शिक्षा डॉ. हरेंद्र कुमार ने परिवार और समाज में महिलाओं की भूमिका पर प्रकाश डाला। गति परियोजना के विभागाध्यक्ष और नोडल अधिकारी डॉ. महेश चंद्र ने गति की प्रगति और अपेक्षाओं, पायलट परियोजनाओं के बारे में जानकारी दी।

उन्होंने महिलाओं के लिए कार्यस्थल की चुनौतियों और उन्हें दूर करने के तरीके बताए। लैंगिक समानता के लिए महिलाओं को सशक्त बनाने पर जोर दिया। कार्यक्रम में मौजद संस्थान की एटिक प्रभारी प्रधान वैज्ञानिक डॉ. रूपसी तिवारी समेत अन्य महिला वैज्ञानिकों और कर्मचारियों को सम्मानित किया गया।

आईवीआरआई में महिला दिवस पर सम्मानित हुईं महिला वैज्ञानिक।

महिला दिवस के उपलक्ष्य में हुई पोस्टर प्रतियोगिता

बरेली। महिला दिवस के उपलक्ष्य में बुधवार को अखिल भारतीय शिक्षा एवं अधिकारिता फाउंडेशन और एंजिल इंस्टीट्यूट ऑफ टेक्नोलॉजी ने संयुक्त रूप से पोस्टर प्रतियोगिता का आयोजन किया। प्रतियोगिता पूर्व माध्यमिक विद्यालय आईवीआरआई में हुई। प्रतिभागियों ने महिलाओं से जुड़े मुद्दों सुरक्षा, सम्मान, शक्ति, शिक्षा आदि पर पोस्टर बनाकर जागरूकता का संदेश दिया। संस्था के अध्यक्ष राजीव शर्मा ने बताया कि प्रतियोगिता का मुख्य उद्देश्य बालिकाओं को अपने अधिकारों के प्रति जागरूक करना था। कोऑर्डिनेटर पूर्णिमा सिंह ने बालिकाओं को महिला सशक्तीकरण के बारे में बताया। संवाद

अमर उजाला
बरेली | मंगलवार, 19 अक्तूबर 2021 10

'किसानों तक पहुंचानी होंगी नवविकसित सभी तकनीक'

आईवीआरआई में नई तकनीक पर हुई गोष्ठी में शामिल वैज्ञानिक। -विज्ञप्ति

अमर उजाला ब्यूरो

वैज्ञानिकों ने पशु रोगों के निदान और उत्पादकता बढ़ाने पर की इंटरफेस मीट

बरेली। आईवीआरआई में सोमवार को कर्नाटक के पशु चिकित्साधिकारियों के साथ वर्चुअल इंटरफेस मीट हुई। विश्व बैंक द्वारा प्रायोजित कास्ट परियोजना के तहत 'नेशनल कैंपेन ऑन एडवांसेस इन एनीमल हेल्थ' विषय पर चर्चा की गई। मुख्य अतिथि भारतीय कृषि अनुसंधान परिषद नई दिल्ली के उपमहानिदेशक डॉ. बीएन त्रिपाठी और विशिष्ट अतिथि भारत सरकार पशुपालन आयुक्त डॉ. प्रवीण मलिक रहे।

डॉ. बीएन त्रिपाठी ने देश की अर्थव्यवस्था को सुदृढ़ करने के लिए पशु उत्पादकता में और सुधार करने, पशु रोगों के इलाज को नई तकनीक विकसित करने का सुझाव दिया। सहायक महानिदेशक पशु विज्ञान, भारत सरकार डॉ. अशोक कुमार ने कमबाइंड वैक्सीन के संबंध में कहा कि जो भी शोध और तकनीक संस्थान ने विकसित की है, उन्हें प्रयोग के लिए किसानों तक पहुंचाना होगा। संस्थान के निदेशक डॉ. त्रिवेणी दत्त ने कहा कि पशुधन और उत्पादकता में वृद्धि हुई है। अनुसंधानकर्ता और प्रयोगकर्ता के बीच बेहतर संबंध बनाने की जरूरत है। इस दौरान कर्नाटक सरकार के पशुपालन निदेशक डॉ. एस. पालेकर, संयुक्त निदेशक, प्रसार शिक्षा डॉ. हरेंद्र कुमार, संस्थान के एटिक प्रभारी डॉ. रूपसी तिवारी समेत अन्य वैज्ञानिक मौजूद रहे।

अमर उजाला बरेली amarujala.com बरेली | बुधवार, 10 अगस्त 2022 5

डीएनए बैंक : विलुप्त होने पर पशु प्रजातियों के तैयार हो सकेंगे क्लोन

डीऑक्सीराइबो न्यूक्लिक एसिड (डीएनए) की संरचना में सुधार से पशुधन क्षमता बढ़ाने में जुटे आईवीआरआई के वैज्ञानिक

एक्सक्लूसिव

अजीत प्रताप सिंह

एनएचपीपी प्रोजेक्ट पर खर्च होंगे 20 करोड़, 35 लाख से तैयार हुई बिग डाटा लैब

बरेली। पशु संकट है या मृत प्रजाति का, इसका पता लगाना अब मुश्किल नहीं रहा। भारतीय पशु चिकित्सा अनुसंधान संस्थान (आईवीआरआई) इज्जतनगर में अत्याधुनिक उपकरणों से लैस जीनोमिक लैब एवं सीक्वेंस बैंक तैयार की गई है। यहां पशु की मृत प्रजाति के डीएनए संरक्षित हो सकें हैं। यदि किन्हीं वजहों से अगर किसी प्रजाति के अस्तित्व को संकट हो तो जरूरत के मुताबिक क्लोनिंग से उसे फिर से विकसित किया जा सकेगा।

पशु आनुवंशिकी विभाग के विभागाध्यक्ष डॉ. भरत भूषण के मुताबिक आईसीएआर के डिविजन ऑफ एनिमल जेनेटिक्स में नेशनल एनिमल जेनेटिक रिसोर्स ब्यूरो (एनबीएजीआर) के सहयोग से नेशनल एग्रीकल्चरल हायर एजुकेशन प्रोजेक्ट (कास्ट एग्रीकल्चर) के तहत कम्प्यूटराइज्ड जीनोमिक्स लैब तैयार की गई है। विभिन्न कार्यों के संपादन की क्षमता में लैस करीब 35 लाख से तैयार की गई लैब को बिग डाटा लैब का नाम दिया गया है। जहां पशुओं के डीएनए संबंधी सभी शोध कार्य और परिणामों का रिकॉर्ड दर्ज हो रहा है। लैब का सर्वर बेहद ही उच्च तकनीक से लैस है। विभिन्न बीमारियों से ग्रसित पशुओं के डीएनए सैंपल को जांच के साथ ही, संरक्षित किया जा रहा है।

कास्ट एग्रीकल्चर परियोजना के प्रधान अन्वेषक वरिष्ठ वैज्ञानिक डॉ. अमित कुमार ने बताया कि लैब में जीनोमिक डाटा का बहुत बारीकी से विश्लेषण होता है। वर्तमान में लगभग सभी प्रजाति के पशुओं के मूल डीएनए को लैब में संग्रहीत किया जा रहा है। प्रजातियों के डीएनए में विभिन्नताएं, रोग प्रतिरोधक क्षमता समेत पशुधन (मांस या दूध) बढ़ाने को लेकर शोध कार्य हो रहे हैं। ऐसी नस्ल के विकास का प्रयास है जो समस्या न बने, सहयोग करे।

लैब में एनालिसिस करते डॉ. अमित। अमर उजाला

डाटा क्वांटिफिकेशन से पता लगा सकेंगे बीमारी

किसी भी पशु में संभावित बीमारी संबंधी जानकारियां उसके आरएनए (राइबो न्यूक्लिक एसिड) में होती है। आरएनए के एक्सप्रेशन का आकलन करते हुए रोग से बचाव की तैयारी की जाती है। ताकि पशुओं के बीमार होने से पहले ही संभावित रोगों से बचाव हो सके। प्रयास है कि आरएनए तकनीकी द्वारा रोग निरोधक क्षमता विकसित हो सके। इसमें स्वाइन फीवर, लंपी डिजीज, रोवेश टीबी, थनैला, परजीवी संक्रमण आदि घातक वायरस से लड़ने की क्षमता भी पशु में होगी। ऐसे में भविष्य में जो नस्ल तैयार होगी वह रोग प्रतिरोधक क्षमता से लैस होगी।

जिसकी जरूरत नहीं, वही प्रजाति होती है नष्ट

डॉ. अमित के मुताबिक प्रकृति और समाज में उस प्रजाति या नस्ल को कभी नष्ट नहीं होने देते, जिसकी जरूरत होती है। चाहे इसके नस्ल संवर्धन की प्रक्रिया होती है। मनुष्य, पशु, कीट या अन्य सहयोगी जीवों को बेहतर वेक्टर का प्रयास रहता है। हालांकि, अन्य किसी कारण या बीमारी के चलते अगर कोई महत्वपूर्ण पशु की प्रजाति नष्ट होने के कगार पर होगी, या नष्ट होगी तो संरक्षित डीएनए से सभी की सहमति होने पर उसके क्लोन भी तैयार किए जा सकेंगे। लैब के पास जो डाटा है, उसका रिकॉर्ड क्लाउड कंप्यूटिंग के द्वारा सुरक्षित किया जाना संभव है।

हिन्दुस्तान
भरोसा नए हिन्दुस्तान का
बरेली, सुक्रवार, 24 फरवरी 2023 08

गाय के दूध से बनी दवा से हो सकेगा आंतों की बीमारी का इलाज

■ पंकज वत्स

बरेली। गाय का दूध बेहद गुणकारी होता है। शरीर को बलिष्ठ बनाने के साथ ही कई बीमारियों से लड़ने के लिए रोग प्रतिरोधक क्षमता को भी बढ़ाता है। ऐसे में अब वैज्ञानिक दूध में पाए जाने वाले एग्जोजोम का इस्तेमाल कर दवा बना रहे हैं, जो आंतों की बीमारियों को ठीक करने में सहायक होगा। यह शोध विश्व बैंक के नेशनल एग्रीकल्चरल हायर एजुकेशनल प्रोग्राम (नाहेप) के तहत किया जा रहा है।

दरअसल, आंतों से संबंधित कई बीमारियां ऐसी होती हैं, जो लोगों को सामान्य लगती हैं। इसे ठीक करने के लिए कई बार लोग बिना डॉक्टर से परामर्श लिए खुद से ही एंटीबायोटिक का सेवन कर लेते हैं। अक्सर ये गलतियां लोगों से होती हैं। किसी बीमारी में लगातार एंटीबायोटिक का इस्तेमाल करने से बाद में उस बीमारियों पर दवाएं बेअसर होने लगती हैं। इन्हीं बातों को ध्यान में रखकर वैज्ञानिक दूध के एग्जोजोम से दवा बना रहे हैं, जो लगातार एंटीबायोटिक का सेवन करने वाले लोगों की बीमारी को ठीक करने में सहायक होगा।

भारतीय पशु चिकित्सा अनुसंधान संस्थान (आईवीआरआई) के वरिष्ठ वैज्ञानिक डॉ. अमित कुमार ने बताया कि पेट में दर्द एवं मरोड़ होना, सूजन, गैस, कब्ज, डायरिया आदि बीमारियों पर एग्जोजोम से बनी दवा अधिक प्रभावी होगा। एग्जोजोम कोशिकाओं में प्लाज्मा झिल्ली से बना होता है। इसकी संरचना 40 से 100 नैनोमीटर तक होती है, जिसे हम खुली आंखों से नहीं देख सकते। इसका इस्तेमाल कर बनी दवा आंत के उस प्रभावी जगह तक पहुंचेगी, जहां बीमारी का जड़ होगा। एग्जोजोम उस जगह तक दवा को पहुंचाकर इफेक्टेड कोशिकाओं को ठीक करेगा। साथ ही शोध के दौरान यह भी पाया गया कि भविष्य में इससे बनी दवा आंत के कैंसर का इलाज करने में भी प्रभावी होगी।

दूध से एग्जोजोम को अलग कर दवा बनाने की जानकारी देते आईवीआरआई के वैज्ञानिक और उनकी टीम।। ● हिन्दुस्तान

■ विश्व बैंक के नेशनल एग्रीकल्चरल हायर एजुकेशनल प्रोग्राम (नाहेप) के तहत किया जा रहा शोध

■ पेट की कई बीमारियों पर होगा प्रभावी

■ वैज्ञानिक बोले, आंत के कैंसर का इलाज करने में भी प्रभावी होगा मिल्क एग्जोजोम, इफेक्टेड कोशिकाओं को करेगा ठीक

दूध से एग्जोजोम बाहर निकालने में मिल चुकी सफलता

आईवीआरआई के वैज्ञानिक डॉ. अमित कुमार ने बताया कि दूध से एग्जोजोम को बाहर निकालने में वैज्ञानिकों को सफलता मिल चुकी है। अब वैज्ञानिक इस कोशिश में लगे हैं कि एग्जोजोम को दवा के वाहक रूप में इस्तेमाल किया जाए। इसका कारण यह है कि दूध में दवा मिलाकर किसी को खिलाने पर यह पाचन क्रिया में पच जाएगा और दवा असर करने में समय लेगा। ऐसे में एग्जोजोम को दवा में मिलाया जाएगा, जो उसका कैरियर बनकर उसे तेजी से बीमारी वाले इफेक्टेड कोशिकाओं तक पहुंचाएगा और बीमारी जल्द ठीक हो सकेगी।

Annexure-V

2.3 Capacity building programs to improve the research effectiveness

3. International trainings for students and faculties

Subject areas	*Host institutes, period of training*	*Output of the training*
Students		
49	*Three month*	New skills & knowledge gained: Acquiring knowledge
Faculty		
22	*One week, one month and three month*	up gradation skill and entrepreneurship among faculty in the livestock health field through international training/visit

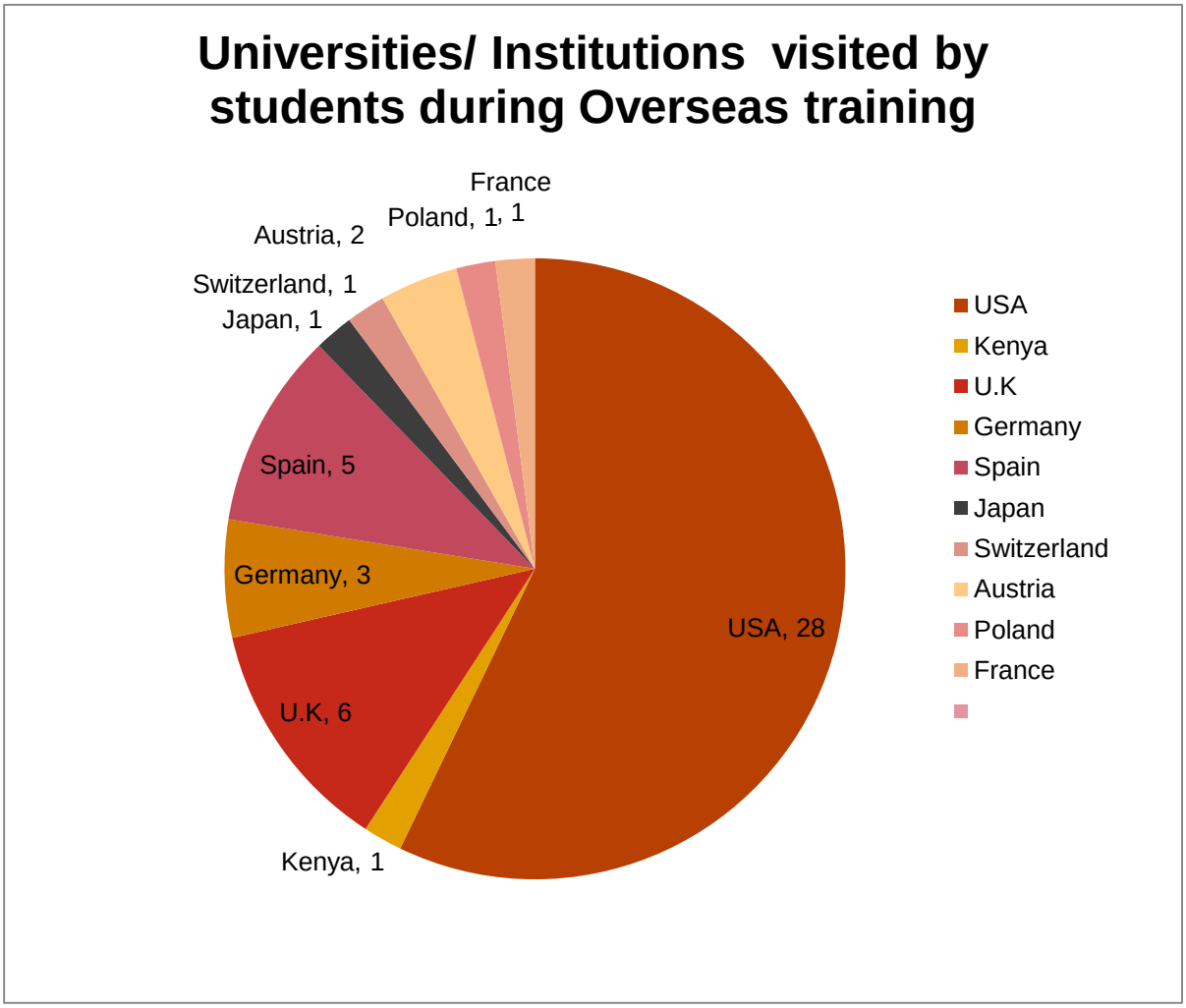
List student complete overseas training at different reputed Institute/Universities of abroad :-

S.N	Name of student	Institute visited / to be visited	period of training	Training areas
1ST Batch (2019-20)				
1.	Anil Gattani (P- 2021) Animal Biochemistry	University of Missouri, Columbia, USA	20-07-2019 to 14-10-2019	Biosensor techniques
2.	Mahvash Hira Khan, (M-5869) Animal Biochemistry	Kyushu University, Fukuoka, Japan	09-08-201- to 09-10-2019	Immunodiagnostics-SENSOR
3.	Waseem Akram Malla (P-2031) Veterinary Biotechnology	Michigan State University, USA	01-09-2019 to 01-12-2019	Bioinformatics, big-data analyses, new-generaton sequencing and sequence data analysis
4.	Richa Arora (P-2078) Veterinary Biotechnology	Michigan State University, USA	01-09-2019 to 01-12-2019	Bioinformatics, Big data analysis, new-generation sequencing and sequence data analysis
5.	Akansha Singh (P-2051) Animal Genetics & Breeding	Michigan State University, USA	01-09-2019 to 01-12-2019	QTL analysis and statistical modeling for GWAS
6.	Ranjitha H.B. (P-2082) Veterinary Biotechnology	University of Madrid, Spain	09-11-2019 to04-02-2020	Marker/ combined/ thermostable vaccine/ genetically engineered vaccine/reverse genetics
7.	Arnav Mehrotra (P-2116)	ETH Zurich Switzerland	14-10-2019 to 17-01-2020	Genome-wide association study (GWAS)/QTL analysis
8.	Mageswary R, P-P-1869 Veterinary Virology	Pirbright Institute, UK	27-02-2020 to15-05-2020	Marker vaccine and DIVA tests for Peste des petits ruminants
9.	Pragya Joshi (2055) Extension Education	Pennsylvania State University, USA	01-03-2020 to16-06-2020	ICT/e-learning
2nd Batch(2019-20)				
1.	M.S. Kannadhasan (P-2045), Vet. Extn. Education	International Livestock Research Institute (ILRI), Nairobi, Kenya	22-10-2019 to 21-12-2019	Livestock Health Economics
2.	Pruthviraj D.R. (P-2037)	The Roslin Institute,	04-11-2019	Bioinformatics/ Big-data analyses

	Animal Genetics & Breeding	University of Edinburgh, U.K.	to25-01-2020	
3.	Purnima Gogoi (P-1965) Vet. Biotechnology	Ruhr-University Bochum, Germany	05-11-2019 to 01-02-2020	Epidemiology of AMR
4.	Lahari Laddika (P 2059) Vet. Microbiology	Dairy Institute of Asturias, Spain	12-11-2019 to 08-02-2020	Modern Vaccines/ Combined Vaccines
5.	Richa Pachauri (P-1939) Vet. Virology	IREC, Ciudad Real, Spain	12-11-2019 to 08-02-2020	Vaccine delivery System
6.	Parthasarathi B. C. (P-1993), Vet. Parasitology	IREC, Ciudad Real, Spain	12-11-2019 to 29-01-2020	Multi antigen vaccine
7.	Gautham Kolluri (P - 2086), Poultry Science	Federrich Loeffler Institute of Farm animal genetics Germany	27-11-2019 to11-02-2020	CRISPR (Gene editing)
8.	Marcia Ashmi J,(P 2058), Vet. Microbiology	university of Glasgow Scotand, U K	02-12-2019 to 01-03-2020	Advanced Diagnostic/Biosensor
9.	Chaple Ashwini Rameshrao, (P 2074), Vet. Microbiology	The National Veterinary School of Alfort ,Paris, France	02-01-2019 to 19-03-2020	Host-Pathogen Interaction
10.	Pallavi Deol ,(P 2075)Vet. Microbiology	University of Wisconsin, Madison, USA	02-01-2020 to 20-03-2020	CRISPR gene editing
11.	Nikhil K C,(P 2104),Animal Biochemistry	N C State University, Raleigh USA	12-01-2020 to 14-04-2020 but came back on 16-06-2020	CRISPR-Cas9
12.	Supriya Yadav,(P2122), Vet. Medicine	Kansas State University USA	14-01-2020 to 14-04-2020 but came back on 16-06-2020	Antimicrobial Resistance
13.	Anjali Kumari, (P 1920),Livestock Production & Management	Louisiana State University, USA	15-01-2020 to14-04-2020 but came back on 21-06-2020 due to covind 19	E- learning and ICT tools
14.	T Rama, (P 2099),Animal Biochemistry	University of Reading, UK	15-03-2020 to 13-06-2020(Come back to india on 19-03-2020 due to covid-19)	Marker/ combined vaccine development
3rd Batch(2021-22)				
1.	Reetika Chourasia, (P-2174), VPA	Royal Veterinary college London,UK	11/11/2021 to 11/02/2022	Advance diagnostics and Bioinformatics
2.	Arun S Somagond, (P-2188), LPM	University of Illinois Urbana-Champaign, USA	29/12/2021to 29/03/2022	Immunonutrition and Clinical nutrition
3.	Prachurya Biswal,(P-2169), LPM	University of Veterinary Medicine, Vienna, Austria	08/01/2022 to 25/03/2022	Animal Behaviours and Vaccinology
4.	Sushant Handage, (P-2181), EXT	Arizona State University, USA	01/10/2021to31 /12/2021	Impact assessment teaching
4th Batch (2021-22)				
1.	Karthikeyan R, (P-2206) VPE	Purdue University , West	16/02/2022 to	Molecular epidemiology of AMR

		Lafayette, USA	27/03/2022	
2.	Deepanker Bisht, (P-2145) BTY	University of Vienna, Austria	19/12/2021 to 16/03/2022	Thermostable vaccine and Vaccine delivery systems
3.	Diksha P Gourkhede, (P-2254), VPE	Justus-Liebig University, Giessen, Germany	11/11/2021to 08/02/2022	Molecular epidemiology of AMR
4.	Megha G K (P-2272), VPE	North Carolina state University, USA	15/12/2021to 15/03/2022	Advanced diagnostics and Biosensor techniques
5.	Chayna Singha Mahapatra, (P-2246), VMC	The University of Alabama, USA	02/03/2022to 27/03/2022	Gene editing including CRISPR-Cas
6.	Harini K R, (P-2221), LPM	Institute of Genetics and Animal Biotechnology, Jastrzebiec, Poland	02/01/2022to 25/03/2022	Animal behavior
7.	Manisha Medhi, (P-2204), VMC	The Ohio State University, USA	09/02/2022 to 28/03/2022	Host-pathogen interaction
8.	Srishti Soni, (P-2266), VMD	University of Nebraska, USA	15/02/2022 to 27/03/2022	Molecular epidemiology of AMR
9.	Yancy Mary Issac, (P-2270) AN	South Dakota State University, USA	21/01/2022 to 26/03/2022	Immunonutrition and clinical nutrition
5th Batch(2022-23)				
1.	Akanksha Yadav, (P-2133), VPH	Kansas State University,Manhattan,USA	06-09-2022 to 17-11-2022	Molecular epidemiology of AMR
2.	Indu Yadav, (M-6253) VPA	University of Castilla La Mancha, Spain	15-10-2022 to 23-11-2022	Advance Diagnostic-Molecular and Serological test for hemoparasitic infection in cattle/buffalo
3.	Himani Agri, VPE (P-2347)	Kansas State University, USA	01-11-2022 to 01-02-2023	Molecular Epidemiology of AMR
4.	Mrinalini Saini, VMC (P-2331)	Kansas State University, USA	07-11-2022 to 07-02-2023	Molecular Epidemiology of AMR in Bovine Mastitis
5.	Sheikh Firdous Ahmad, AGB (P-2054)	Indiana University & Purdue University Indianapolis (IUPUI), USA	10-11-2022 to 09-02-2022	Bioinformatics and Bigdata analysis/QTL Analysis
6.	Demian c. Johnson, VEE (P-2290)	International Food Policy Research Institute in Washington, D.C	14-11-2022 to13-02-2023	Impact assessment e-learning
7.	Kappari Laharika, VPA (M-6181)	University of Georgia, USA	20-10-2022 to 20-01-2023	Advance Diagnostic-Molecular and Serological test for hemoparasitic infection in cattle/buffalo
8.	Kasi Sowjanya Lakshmi, R, AN (P-2366)	Pennsylvania State University, USA	01-12-2022 to28-02-2023	Immuno-Nutrition and Clinical nutrition
9.	Vani A, AGB, (P-2294)	Indiana University & Purdue University Indianapolis (IUPUI), USA	15-11-2022 to 16-03-2023	Bioinformatics and Bigdata analysis/QTL Analysis

10.	Sanjana, VMC, (P-2285)	University of Florida, College of Veterinary Medicine, USA	10-01-2023 to 25-03-2023	Advanced Diagnostics and Biosensor Techniques
11.	Adwitiya Das, VMC, (P-2367)	University of Reading, UK	20-12-2022 to27-03-2023	Marker/combined /Themostable FMD vaccine
12.	Fatema Akter, VMC, (P-2322)	The Ohio State University, USA	26-11-2022 to 26-02-2023	Molecular Epidemiology of AMR in Bovine Mastitis
13.	Shiv Kumar Tyagi, AGB, (P-2293)	Indiana University & Purdue University Indianapolis (IUPUI), USA	01-12-2022 to16-03-2023	Bioinformatics and Bigdata analysis/QTL Analysis



Glimpse of students during overseas training:-

Dr Anil Gattani (P- 2021) Animal Biochemistry overseas training at University of Missouri, Columbia, USA

Dr.Mahvash Hira Khan, (M-5869) Animal Biochemistry durining overseas training at Kyushu University, Fukuoka, Japan

Dr Waseem Akram Malla (P-2031) Veterinary Biotechnology, during overseas train at Michigan State University, USA

Dr Richa Arora (P-2078) Veterinary Biotechnology, during overseas train at Michigan State University, USA

Dr Akansha Singh (P-2051) Animal Genetics & Breeding, during overseas train at Michigan State University, USA

Dr Ranjitha H.B. (P-2082) Veterinary Biotechnology, during overseas train at University of Madrid, Spain

Dr Arnav Mehrotra (P-2116) Animal Genetics & Breeding, during overseas train at ETH Zurich Switzerland

Dr. Mageswary R, P-P-1869 Veterinary Virology, during overseas train at Pirbright Institute UK

Dr. Pragya Joshi (2055) Extension Education, during overseas train at Pennsylvania State University, USA

Dr. M.S. KANNADHASAN (P-2045), Vet. Extn. Education, during overseas train at International Livestock Research Institute (ILRI), Nairobi, Kenya

Dr Pruthviraj D.R. (P-2037) Animal Genetics & Breeding, during overseas train at The Roslin Institute,

Dr Purnima Gogoi (P-1965) Vet. Biotechnology, during overseas train at Ruhr-University Bochum, Germany

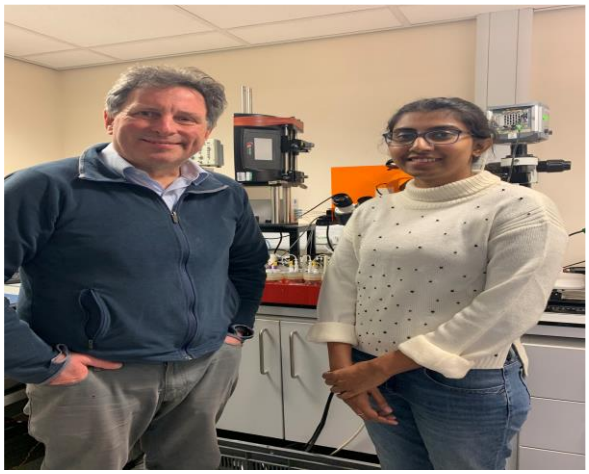
University of Edinburgh, UK

Dr Lahari Laddika (P 2059) Vet. Microbiology, during overseas train at Dairy Institute of Asturias, Spain

Dr Richa Pachauri (P-1939) Vet. Virology, during overseas train at IREC, Ciudad Real, Spain

Dr Parthasarathi B. C. (P-1993), Vet. Parasitology, during overseas train at IREC, Ciudad Real, Spain

Dr. Gautham Kolluri (P - 2086), Poultry Science, during overseas train at Federrich Loeffler Institute of Farm animal genetics Germany

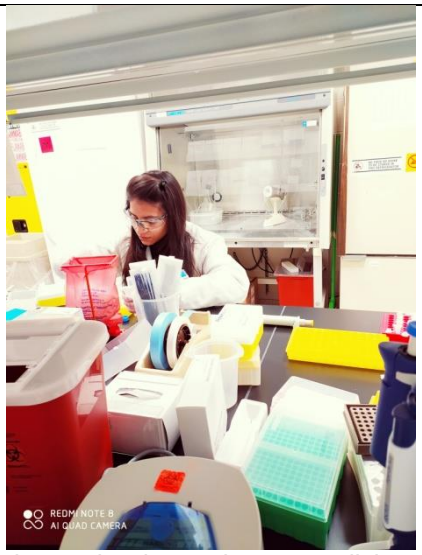


Dr. Marcia Ashmi J,(P 2058), Vet. Microbiology, during overseas train at university of Glasgow Scotand, U K

Dr. Chaple Ashwini Rameshrao, (P 2074), Vet. Microbiology, during overseas train at The National Veterinary School of Alfort) ,Paris, France

Dr Pallavi Deol ,(P 2075)Vet. Microbiology, during overseas train at University of Wisconsin, Madison, USA

Dr. Nikhil K C,(P 2104),Animal Biochemistry, during overseas train at N C State University, Raleigh USA



Dr. supriya Yadav,(P2122), Vet. Medicine, during overseas train at Kansas State University USA

Dr. Anjali Kumari, (P 1920),Livestock Production & Management, during overseas train at Louisiana State University, USA

Dr Yancy Mary Issac,P-2270,Animal Nutrition, during overseas train at

Dr Reetika Chourasia, P-2174, Vet. Parasitology, during overseas train at Royal Veterinary college London,UK

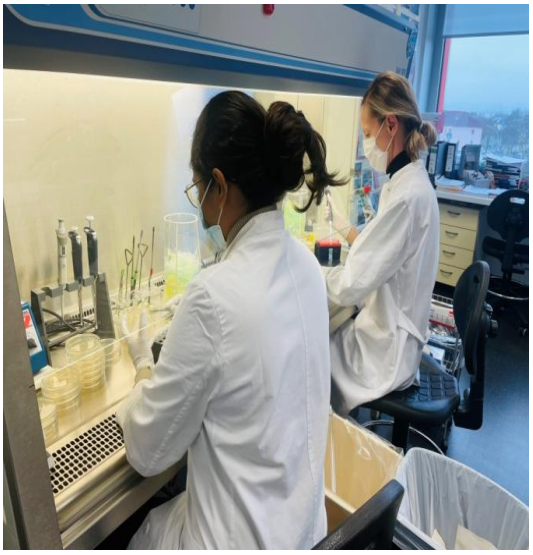
Dr Arun S Somagond, P-2188, LPM, during overseas train at University of Illinois Urbana-Champaign, USA

Dr Prachurya Biswal, P-2169, LPM, during overseas train at University of Veterinary Medicine, Vienna, Austria

Dr Sushant Handage, P-2181, EXT, during overseas train at Arizona State University, USA

Dr Karthikeyan R,P-2206,VPE, during overseas train at Purdue University , West Lafayette, USA

Dr Deepanker Bisht,P-2145,Vet Biotechnology, during overseas train at University of Vienna, Austria



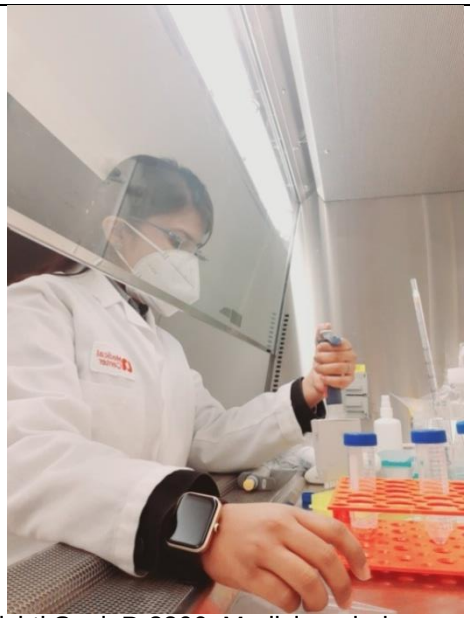
Dr Diksha P.Gourkhede, P-2254, VPE, during overseas train at Justus-Liebig University, Giessen, Germany

Dr Megha G K,-P-2272,VPE, during overseas train at North Carolina state University, USA

Dr Chayna Singha Mahapatra,P-2246 Vet. Vecteriology and mycology, during overseas train at The University of Alabama, USA

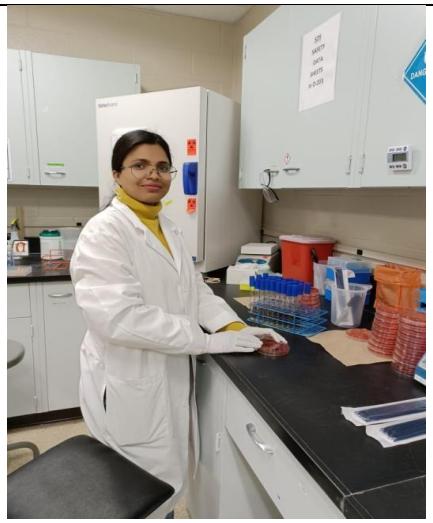
Dr Harini K R, P-2221,LPM, during overseas train at Institute of Genetics and Animal Biotechnology, Jastrzebiec, Poland

Dr. Manisha medhi, P-2204, Vet. Vecteriology and mycology, during overseas train at The Ohio State University, USA



Dr Srishti Soni, P-2266, Medicine, during overseas

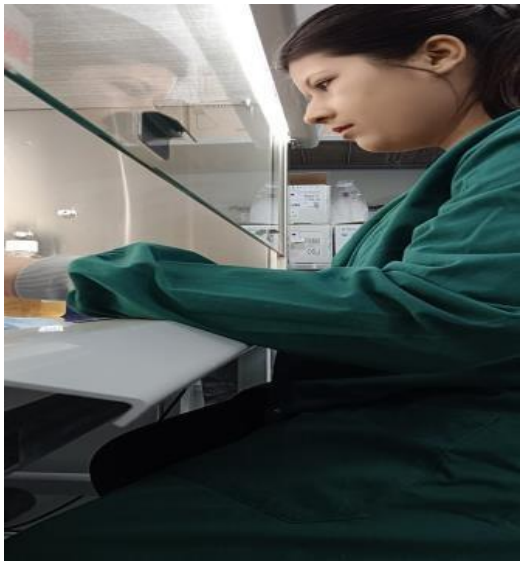
Dr Kasi Sowjanya Lakshmi, R, P-2366, Animal Nutrition, during overseas train at Penn State University, Wiley Lane, University Park, Pensilvania

train at University of Nebraska, USA	state, USA
 Dr Akanksha yadav, P-2133, Veterinary Public Health and Epidemiology, during overseas train at College of Veterinary Medicine, Kansas State University, Manhattan, Kansas	 Dr Indu Yadav, M-6253, Veterinary Parasitology, during overseas train at Genomics and Biotechnology laboratory,IREC,CIUDAD REAL,SPAIN
 Demian C Johnson, P-2290, Extension Education, during overseas train at International Food Policy Research Institute, , Washington, USA	 Himani Agri, P-2347, Veterinary Public Health and Epidemiology, , during overseas train at Department of Clinical Sciences,College of Veterinary Medicine, Kansas State University, Manhattan, Kansas, USA

Mrinalini Saini , P-2331, Veterinary Microbiology, during overseas train at Department of Clinical Sciences, College of Veterinary Medicine, Kansas State University, Manhattan, Kansas

Fatema Akter, P-2322, Veterinary Microbiology, during overseas train at Center for Food Animal Health, The Ohio State University, Wooster campus

Shiv Kumar Tyagi, P-2293, Animal Genetics, during overseas train at Luddy School of Informatics, Computing and Engineering, IUPUI 535 West Michigan Street Indianapolis, IN 46202

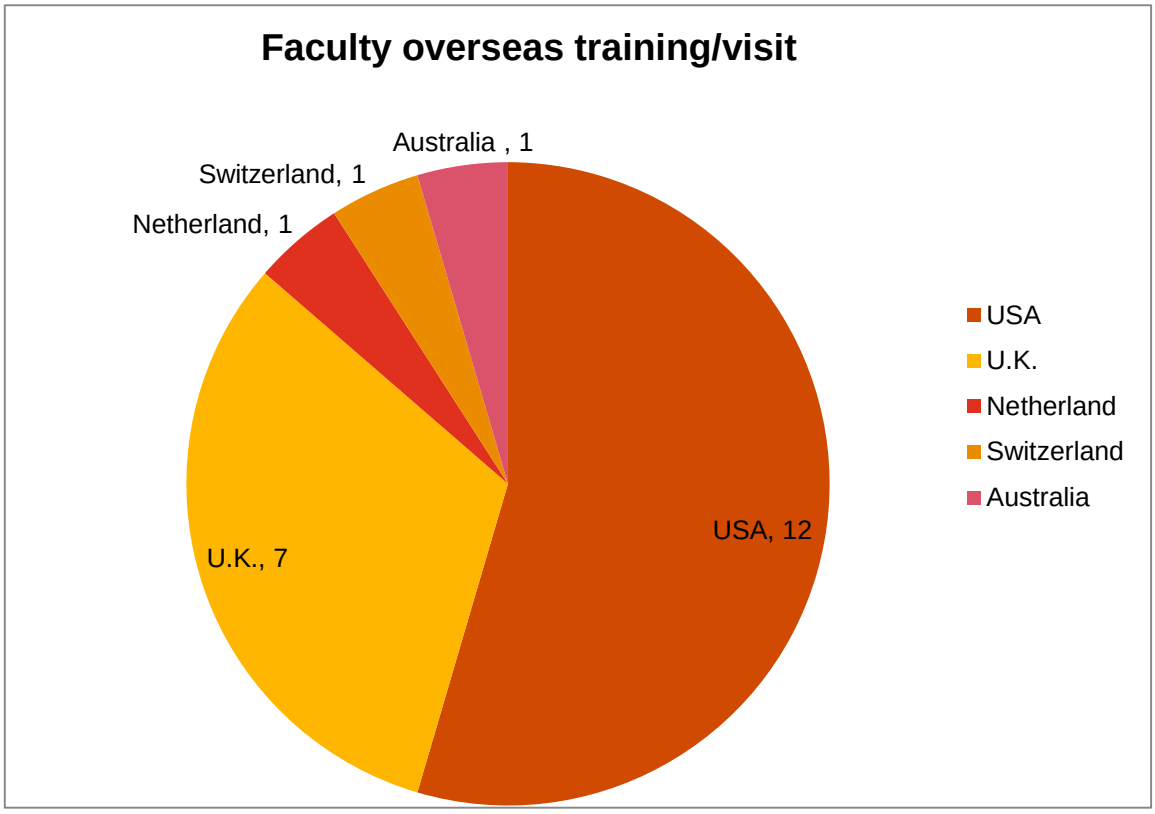


Adwitiya Das , P-2367, Veterinary Microbiology, during overseas train at Health and Life Science, University of Reading, Whiteknights, Reading RG6 6EX, United Kingdom

List of faculty complete overseas training/visit:-

SN	Name & Designation of Faculty	Institute visited / to be visited	Training Area	Duration of visit/training
1.	Dr Aniket Sanyal, PS & JD, ICAR-IVRI, Bengaluru campus	Pirbright Institute, UK	Improved/new vaccines and companion diagnostics for foot-and-mouth disease	One Week
2.	Dr Pallab Chaudhury, Head, Bacteriology and Mycology Division	Pirbright Institute, UK	Development of Marker vaccines for PPR	One Week
3.	Dr Samiran Bandopadhyay, Principal Scientist	Pirbright Institute, UK	Therapeutic intervention for treatment of disease conditions	One Week
4.	Dr. Mahesh Chander, PS, Head, Division of Extension Education	University of Florida, 113-C, Bryant Hall, Gainesville, USA	Impact-analysis of extension, teaching & research	One Week
5.	Dr. A.K. Verma, Head A.N. Division	University of Florida, 113-C, Bryant Hall, Gainesville, USA	Immunonutrition	One Week
6.	Dr. A. K. Tewari,Principal Scientist, Division of Parasitology	Department of Biomedical Sciences, College of Medicine Rockford, University of Illinois, USA	Advanced diagnostics: Molecular/serological tests for haemo-parasitic infections in cattle/ buffalo	One Week
7.	Dr Bina Mishra, PS, IVRI, Izatnagar	Pirbright Institute, UK	Recombinant sheeppox and PPR vaccine candidate	One month
8.	Dr Madhu Hosamani, Scientist, IVRI Campus Bengaluru	Wageningen Bioveterinary Research, Lelystad, Netherlands	Companion diagnostics for foot-and-mouth disease	One month
9.	Dr Shanmugam Chandra sekar, Scientist, IVRI Campus Mukteswar	Pirbright Institute, UK	Improved/ New vaccine for PPR	One month
10.	Dr Amit Kumar, Sr. Scientist, A G Division	ETZ Zurich, Switzerland	Genome Wide Association study / QTL analysis	One month
11.	Dr. Sunil E. Jadhav, Pr. Scientist, A N Division	University of Florida, 113-C, Bryant Hall, Gainesville, USA	Immunonutrition	One month
12.	Dr. Bablu Kumar, Pr. Scientist, B P Division	University of Florida, 113-C, Bryant Hall, Gainesville, USA	Penside Diagnostic of Brucella	One month
13.	Dr. B.H.M. Patel, Pr. Scientist, IVRI Campus Bengaluru	University of Florida, 113-C, Bryant Hall, Gainesville, USA	Immuno-Nutrition and clinical nutrition	One month
14.	Dr R.P. Tamilselvan, Sr. Scientist, IVRI Campus Bengaluru	Pirbright Institute, UK	FMD vaccine and diagnostics	One month
15.	Dr Rajat Garg, Pr. Scientist, Division of Parasitology	Royal Veterinary College, Hawkshead campus, Hatfield Hertfordshire, U.K	Molecular/ serological tests for haemo-parasitic infections in cattle/buffalo	One month
16.	Dr B.C Sarvanan, Principal Scientist	University of Georgia	Molecular/serological tests for haemo-parasitic infections in	One month

	(Vet. Parasitology) CADRAD	USA	cattle/ buffalo	
17.	Dr M. A. Ramakrishnan, Principal Scientist, Regional Station Bangluru	Pennsylvania State University, USA	Combination Vaccine	One month
18.	Dr Ujjwal Kumar De, Senior Scientist, Medicine Division	University of Minnesota, USA	Antimicrobial resistance	One month
19.	Dr Ravi Kant Agrawal, Principal Scientist, Standardization Division	New York Medical College, New York, Valhalla	Antimicrobial resistance	One month
20.	Dr Abhishek, Senior Scientist, B & M Division	New York Medical College, New York, Valhalla	Molecular epidemiology and AMR & alternative therapy	One month
21.	Dr Himani Dhanze, Scientist (SS), VPH	The University of Sydney Australia	ICT tool for the diseases spread modelling	Three Month
22.	Dr Sonalika Mahajan, Scientist (SS), Standardization Division	Pennsylvania State University, USA	Host pathogen interaction	Three Month



Glimpse of faculties during overseas training: -

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Dr Shanmugam Chandra sekar during overseas training Pirbright Institute, UK</td>
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Dr Aniket Sanyal, Dr Pallab Chaudhury, Dr Samiran Bandopadhyay during overseas Short Visit at Pirbright Institute, UK</td>
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Dr Bina Mishra, PS, IVRI, Izatnagar, during one month overseas training in Pirbright Institute, UK</td>
<td> 
Dr madhu Hosamani, Scientist, IVRI Campus Bengaluru , during one month overseas at Vesicular diseases laboratory, Wageningen Bioveterinary Research, Lelystad, Netherlands</td>
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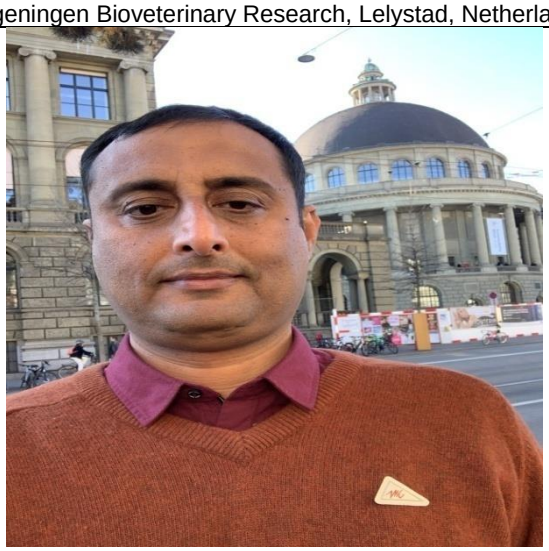
Dr A.K Verma and Dr Mahesh Chander during overseas visit at University of Florida, 113-C, Bryant Hall, Gainesville, USA</td>
<td> 
Dr Amit Kumar one month overseas training at ETZ Zurich, Switzerland</td>
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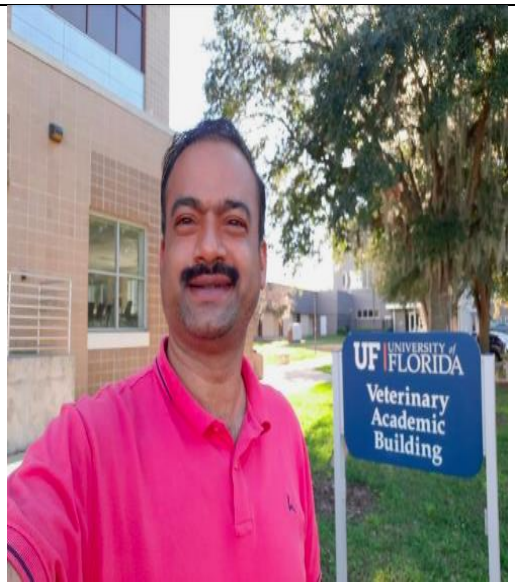
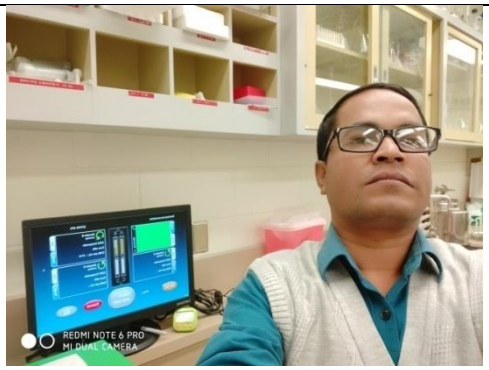
Dr Rajat Garg, Pr. Scientist, during overseas training at Royal Veterinary College, Hawkshead campus, Hatfield Hertfordshire, UK



Dr. B.H.M. Patel, Pr. Scientist, during overseas training at University of Florida, 113-C, Bryant Hall, Gainesville, USA

Dr Sonalika Mahajan in Dr Suresh V. Kuchipudi's lab at Huck Institute of Life Sciences, PSU, USA

Dr B.C Sarvanan, Principal Scientist (Vet. Parasitology) during overseas training at University of Georgia USA



Dr Ujjwal Kumar De, Senior Scientist, Medicine Division during overseas training at University of Minnesota, USA

Dr. M. A. Ramakrishnan receiving training completion certificate under CAAST programme fro Dr Suresh V Kuchipudi, Director, ADL, Penn State University

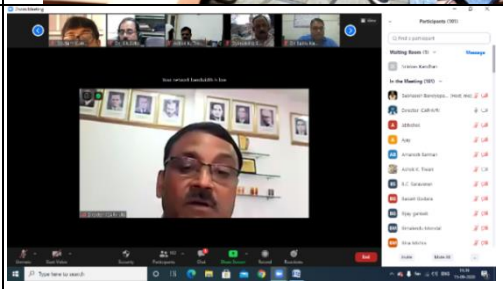
Annexure-VI

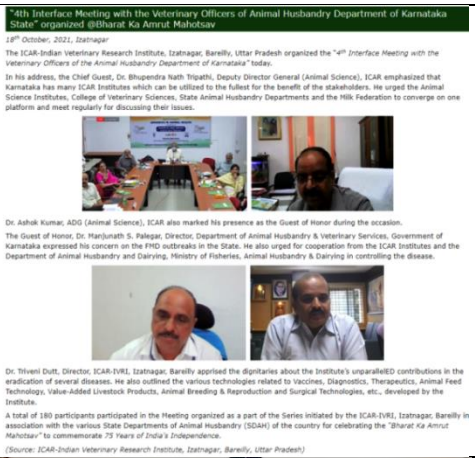
2. National trainings for students and faculties:

SN	Name of the Workshop/Interface meet Coordinators	Topic and participants	Date	Photo
1	1-Dr. K.K Chaturvedi, Senior Scientist, ICAR-IASRI 2. Dr. Sanjeev Kumar, Senior Scientist, ICAR-IASRI 3. Dr. Dwijesh Chandra Mishra, Scientist , ICAR-IASRI	Next Generation sequencing Data Analysis, **total 48 participants**	24-25-April 2019	
2	1. **Dr . DVR Praksh Rao** Chairman and Managing Director, Prakash food and Feed Mills , Channai **2. Dr, Dinesh Bhsale**, regional sales Director, AB VISTA Southasia Vice President, Poulty federation of india Pune **3. Dr. Chandra shakhar** Senior Dairy Nutritionist & I/C South asia Animal Nutrition & health Division, DSM Anand Nagar	Skill and Entrepreneurship Development in Animal Nutrition and allied Science, **total 60 participants**	18-06-2019	
3	**1.Dr Prem Kumar**, General Manager, Indovax Pvt. Ltd. , Hisar 2. **Dr Brijesh Singh**, Head, Technical BD & Swine Business, Thane 3. **Dr TVS Rao**, Sr. Vice President, Brilient Bopharms, Hyderabad 4. **Shri Rahul Srivastava**, AVP, Heaster, Bio Sciences, Ahmedabad **5. Dr. Sandeep Saran** PS, & head Poultry Economics and Agribusiness Research I/c, Institute Technology Management Unit ICAR- Central Avian	Industry-Academic interface for entrepreneurship and skill development in vaccine and diagnostics, **total 123 participants**	23.08.2019	

	Research Institute, Izatnagar			
4	1. Dr Shashi Rani, Associate Prof.(English) Deemed University, IVRI, Izatnagar 2. Dr Rupasi Tiwari, P.S. & Nodal Officer, EAP [CAAST-ACLH], IVRI, Izatnagar	Tutorial Course on Spoken & Written English (for the UG, PG &, PhD students, **total 36 participants**	23Sept 2019 to 26Sept 2019	
5	Mrs. Vidisha garg	Intellectual property right (IPR) Workshop, **total 71 participants**	01-10-2019	
6	Dr Abdul Samad, Ex Dean and Consultant GALVmed, Mumbai Dr K P Suresha, Principal Scientist, ICAR-NIVEDI, Bangalore Dr T K Mohanty, Principal Scientist, ICAR-NDRI, Karnal Mr. Parvinder Singh, Wipro, Gurgaon Dr V K Tiwari, Professor, IIT, Kharagpur Dr A P Ruhil, Principal Scientist, ICAR-NDRI, Karnal Dr Sudeep Marwaha, Principal Scientist, ICAR-IASRI, New Delhi Mr Priyank Saxena, Director, AgVerse, Bengaluru	Application of Artificial Intelligence in Animal Science , **total 258 participants**	05-11-2019	
7	Dr Sujata Sethi I/C Hindi cell at ICAR-IVRI	Hindi Orientation Workshop (for the UG, PG &, PhD students of non Hindi), **total 84 participants**	18-11-2019 to 19-11-2019	

8	**Dr Richa Sood** Principal Scientist ABSO & I/C Animal Facility ICAR-NIHSAD **Dr. Harshad Murugkar** Principal Scientist ICAR-National Institute of High Security Animal Diseases **Dr GK Gaur** ICAR-IVRI **DR. K.Vamsi Krishna Reddy** Senior Resident Department of Hospital Administration AIIMS, New Delhi **Dr G. VENKATESH** ICAR-NIHSAD, Bhopal **Dr. Subodh Kumar**, Sc 'F' Defence R & D Establishment, DRDO, Gwalior **Dr. Jagadish** Hiremath PhD (USA) Senior Scientist & Biosafety Officer ICAR-National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bengaluru, Karnataka	National Workshop on Biosafety and Biosecurity in Animal Science Research and Development, **total 206 participants**	3-12-2019	
9	Industry-Academia Interactive Meet for Bridging Skill Gap	More than 30 industrialist came for meet at ICAR-IVRI, **total 65 participants**	04-12-2019	

10	Industry-Academia Interface Meet Meet organized at ICAR-IVRI, Eastern Regional Station, Kolkata.	13 representatives of Industries and Entrepreneurs were came , **total 64 participants**	08-01-2020	
11	1. Dr Shashi Rani, Associate Prof.(English) Deemed University, IVRI, Izatnagar 2. Dr Rupasi Tiwari, P.S. & Nodal Officer, EAP [CAAST-ACLH], IVRI, Izatnagar	Tutorial Course on Spoken & Written English (for the UG, PG &, PhD students, **total 34 participants**	27 February 2020 to 29Feb. 2020	
12	Eastern Regional Station, ICAR-IVRI, Kolkata, organised "Industry-Academia Interface Meet" using online digital platform	23rd industries & 07 farmers meet, **total 151 participants**	on 15th September 2020	
13	Dr Amit Kumar, PI CAAST-ACLH Project, IVRI-Izatnagr organized workshop through virtual mode	Three days training Programme on "Basic and applied bioinformatics in Animal Sciences", **total 191 participants**	9-11 February 2021	
14	Organized "Interface Meeting Series #01" by ICAR-Indian Veterinary Research Institute-Izatnagar under CAAST-ACLH Project by vertual	**Interface meet** on "Advances in animal health "on occasion of "Azadi Ka Amrut Mahotsav" with UP, **total 961 participants**	27th August 2021	

15	Organized"Interface Meeting Series # 2" by ICAR-Indian Veterinary Research Institute-Izatnagar under CAAST-ACLH Project. the participation of the Veterinary officers and higher officials of the SDAH of all the districts of Maharastra state by virtually	**Interface meet** on , National Campaign on ADVANCES IN ANIMAL HEALTH"on occasion of "Azadi Ka Amrut Mahotsav", **total 231 participants**	17th September 2021	
16	Organized "**Interface Meeting Series** # 4" by ICAR-Indian Veterinary Research Institute-Izatnagar under CAAST-ACLH Projectby virtually	organized by ICAR-IVRI on occasion of Nationwide celebrations of "Azadi Ka Amrut Mahotsav" with Himachal Pradesh state , **total 745 participants**	5th October 2021 at 2:00 PM	
17	Organized "**Interface Meeting Series** # 3" by ICAR-Indian Veterinary Research Institute-Izatnagar under CAAST-ACLH Project by virtually	Organized by ICAR-IVRI on occasion of Nationwide celebrations of "Azadi Ka Amrut Mahotsav" with Karnataka, **total 182 participants**	18th October 2021at 3.00PM	 "4th Interface Meeting with the Veterinary Officers of Animal Husbandry Department of Karnataka State" organized @Bharat Ka Amrut Mahotsav 18th October, 2021, Izatnagar The ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, Uttar Pradesh organized the "4th Interface Meeting with the Veterinary Officers of the Animal Husbandry Department of Karnataka" today. In his address, the Chief Guest, Dr. Bhupendra Nath Tripathi, Deputy Director General (Animal Science), ICAR emphasized that Karnataka has many ICAR Institutes which can be utilized to the fullest for the benefit of the stakeholders. He urged the Animal Science Institutes, College of Veterinary Sciences, State Animal Husbandry Departments and the Milk Federation to converge on one platform and meet regularly for discussing their issues. Dr. Ashok Kumar, ADG (Animal Science), ICAR also marked his presence as the Guest of Honor during the occasion. The Guest of Honor, Dr. Manjunath S. Palegar, Director, Department of Animal Husbandry & Veterinary Services, Government of Karnataka expressed his concern on the FMD outbreaks in the State. He also urged for cooperation from the ICAR Institutes and the Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry & Dairying in controlling the disease. Dr. Triveni Dutt, Director, ICAR-IVRI, Izatnagar, Bareilly apprised the dignitaries about the Institute's unparalleled contributions in the eradication of several diseases. He also outlined the various technologies related to Vaccines, Diagnostics, Therapeutics, Animal Feed Technology, Value-Added Livestock Products, Animal Breeding & Reproduction and Surgical Technologies, etc., developed by the Institute. A total of 180 participants participated in the Meeting organized as a part of the Series initiated by the ICAR-IVRI, Izatnagar, Bareilly in association with the various State Departments of Animal Husbandry (SDAH) of the country for celebrating the "Bharat Ka Amrut Mahotsav" to commemorate 75 Years of India's Independence. (Source: ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, Uttar Pradesh)
18	Dr Sheikh firdous Ahmad (Scientist) Dr Hari Om Pandey (Senior Scientist) Under CCAST-ACLH project at ICAR-IVRI Izatnagar	Organized Three days training cum workshop on "Basic of Bioinformatics for Biologist-I", **total 21 participants**	22nd Nov.2021to 24th Nov.2021	

19	Organized international Women day at ICAR-IVRI by Dr Rupasi tiwari.	Felicitation of Women Employees @ ICAR-IVRI on the occasion of International Women's Day, **total 200 participants**	08th march 2022	
20	Organized workshop 1. **Dr. K. Veeranjaneyulu,** Librarian & Head, NIT Warangal, Former Univrsity.Librarian & Professor and P1, NAHEP-NKMC4AER ,PJTSAU, Hyderabad. 2. **Dr. G. Rathinasabapathy** University Librarian & CCPI, NKMC4AER(IG) ,TANUVAS<Chennai 3. **Dr. K. N. Kandpal**, CCPI, NKMC4AER, ICAR-IVRI, Izatnagar	On Emerging Trends in Scholary Publishing On Emerging Research Metrics: An Overview Veterinary e-Resources **total 175 participants**	Organized workshop on "scientific writing and publishing" On 29th July 2022	
21	A workshop organized jointly organized at Navsari Agriculture University Navsari, Gujrat and ICAR-IVRI under CAAST-ACLH project	On "Agripreneurship Bootcamp Cum Ideathon", **total 75 participants**	From 05th Sep.2022 to 09th Sep.2022	
22	A training programmed was organized by the ICAR-IVRI under aegis of CAAST-ACLH project.	" Practical approaches to bioinformatics and Omics technology"	10 th Oct 2022 to 14 th Oct 2022	