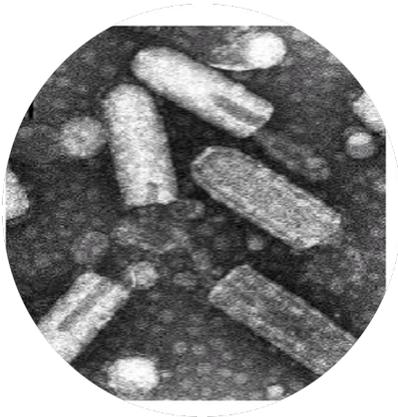




Diagnosis of Rabies in animals



Shrikrishna Isloor

Prof. & Lab. Director

KVAFSU-CVA Rabies Diagnostic Laboratory

WOAH Reference Laboratory for Rabies

Head, Dept. of Vety. Microbiology, Veterinary College, KVAFSU

Hebbal, Bengaluru, India

WHO-WOAH_Training_NIMHANS_21.10.2024



South Asia endemic for dog mediated rabies



Bitten by pet cat, UP man & son die of rabies

Kanpur: A teacher at a government school and his son died within a span of a week due to rabies infection after they were bitten by their pet cat in Akbarpur town in Kanpur, reports **Faiz Siddiqui**.

District officials said the cat was earlier bitten by a dog, which was infected with rabies, sometime in September.

A health officer said the victim, Imtiazuddin, 58, was headmaster and had a pet cat, which was bitten by a rabies-infected dog. "About a fortnight ago, both Imtiazuddin and his son Azeem Akhtar, were bitten and scratched by the cat," he said. "Instead of getting an anti-rabies vaccine, both of them got tetanus injection. On November 21, the family left for Bhopal to attend a wedding where Azeem's health started deteriorating," the officer added.



United Against Rabies (UAR) Consortium



OIE (Now WOAH) Twinning Programme on "Strengthening of diagnosis of rabies in India"



KVAFSU- CVA - CRUCCELL RABIES DIAGNOSTIC LABORATORY

OIE LABORATORY TWINNING PROJECT

2016 - 2019



Animal and Plant Health Agency (APHA)
United Kingdom

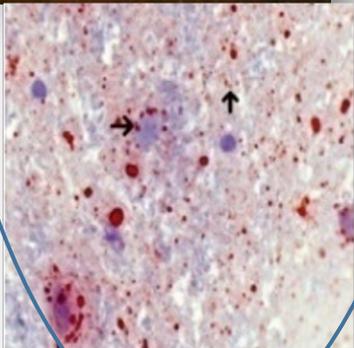
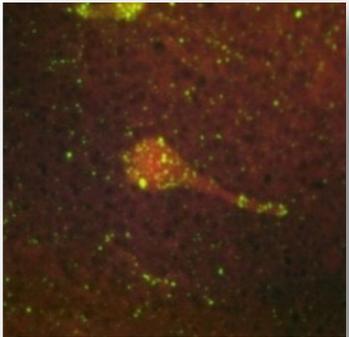
Centers for Disease Control and
Prevention (CDC), Atlanta, GA, USA

Capacity building – the primary mandate

- LFA
- DFA
- dRIT
- PCR

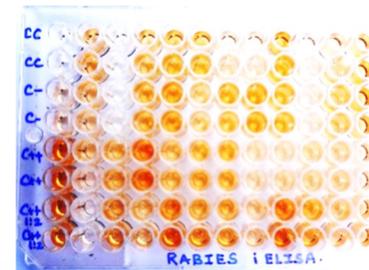
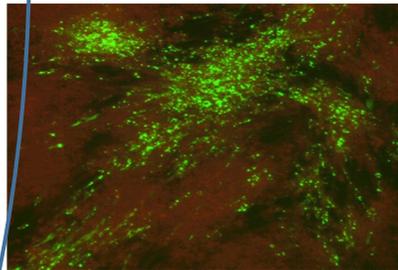
Conventional
✓ Real time

Diagnosis



- RFFIT
 - ✓ Pet travel
 - ✓ Vaccination programme
- ELISA

Seromonitoring



- Phylogenetic analysis
 - ✓ G gene
 - ✓ N gene
 - ✓ G-L intergenic region
- Recombinant G protein ELISA
- Development of inhouse diagnostics- dRIT / DFA / LFA

Post Graduate & Extra mural funded Research



- Trainings / workshops
 - ✓ KVAFSU-CVA RDL
 - ✓ On-site / Regional
 - ✓ Virtual / Hands on - SAARC

Human Resource Development



Quality brain sample needed for accurate diagnosis of rabies

Preliminary Safety

- PreP
- PPE
- Do not aerosolize .

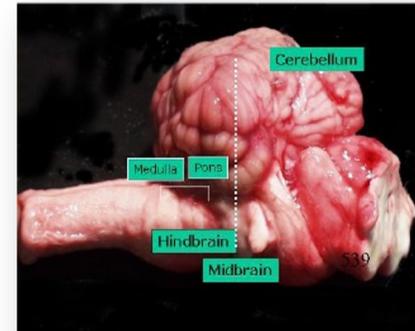


Personal Protective equipment (PPE)

- Disposable gloves
- Face mask and shield
- Eye goggles
- Hair cover /cap
- Disposable apron
- Shoe cover



Conventional skull opening v/s Occipital Foramen approach



Brain sampling by Vets using Occipital foramen method – User friendly, simple, faster, no aerosols

**Old / preserved
carcass:**
use syringe / AI sheath



WHO-WOAH_Training_NIMHANS_21.10.2024



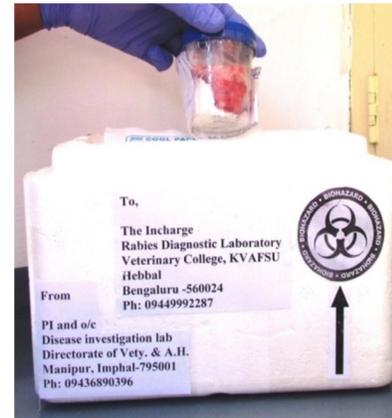
Packing brain tissue in Primary, Secondary and tertiary containers



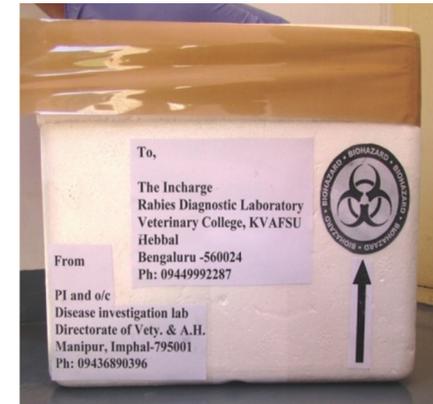
Primary container



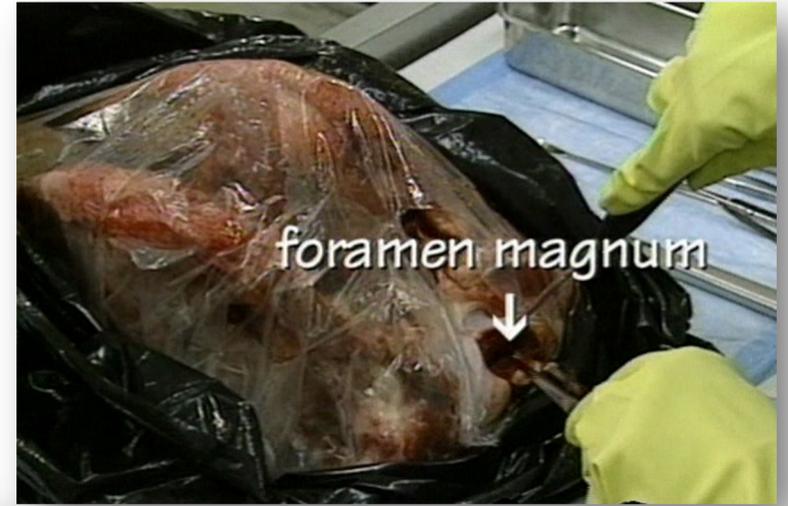
Secondary container



Tertiary container



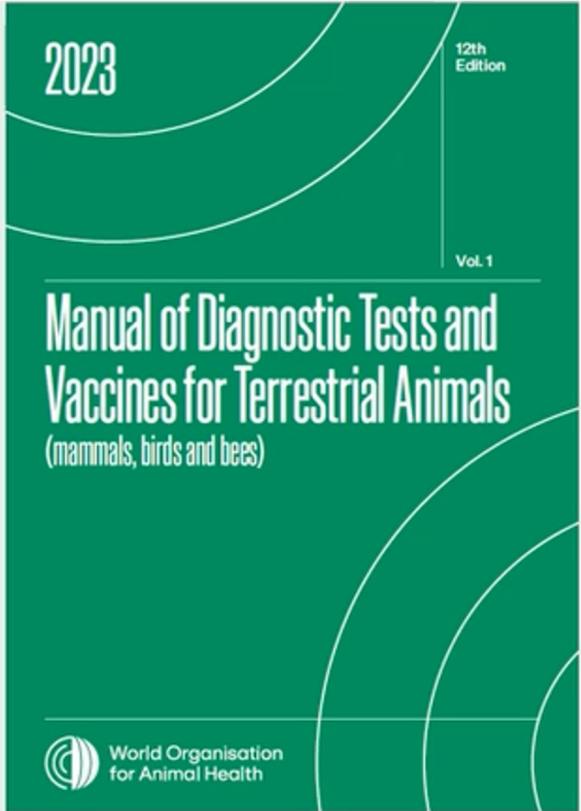
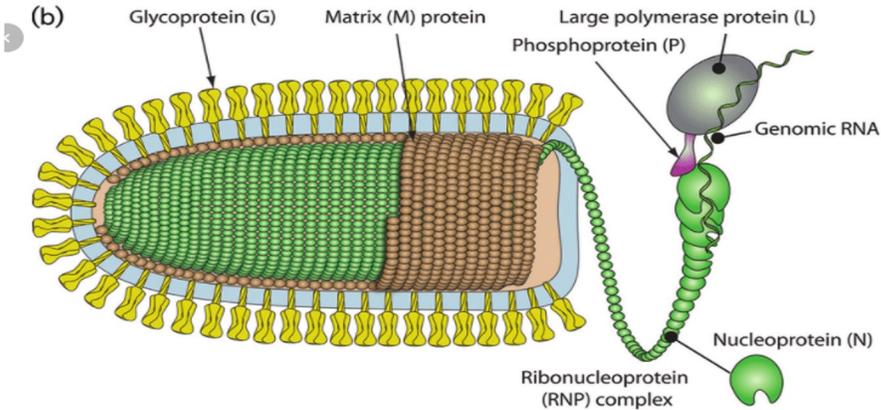
Brain sampling if complete decapitation of head



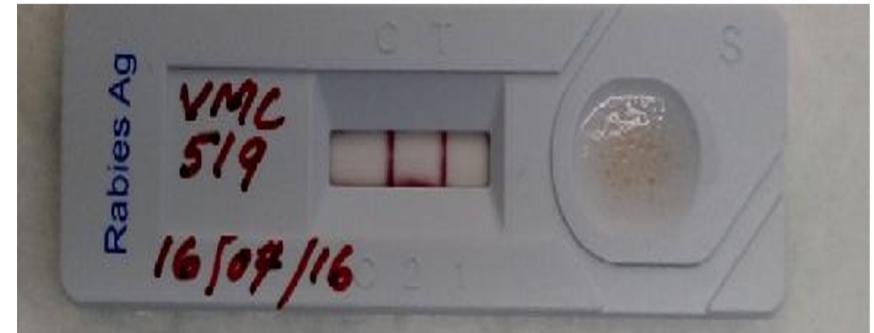
Wolf head



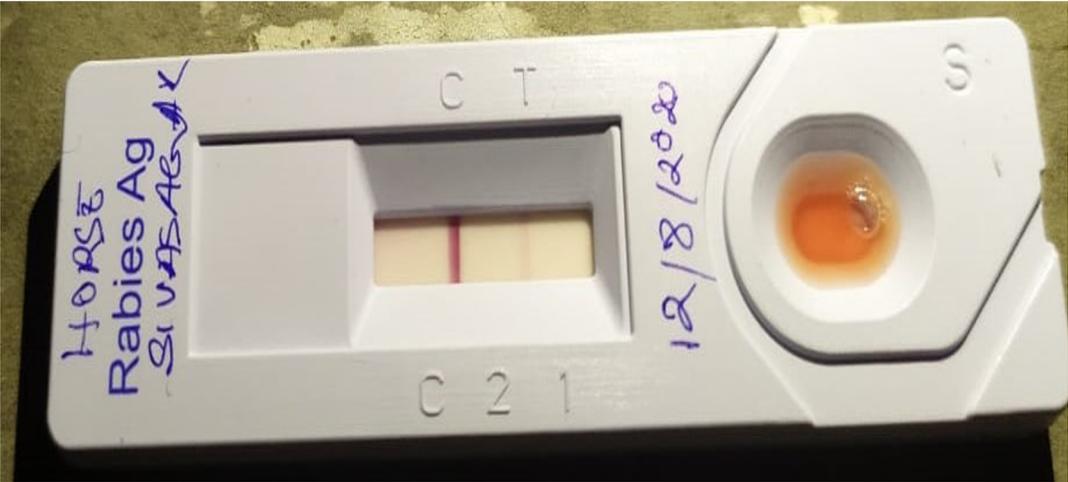
Selection of diagnostics



Lateral Flow Immunoassay (LFA)



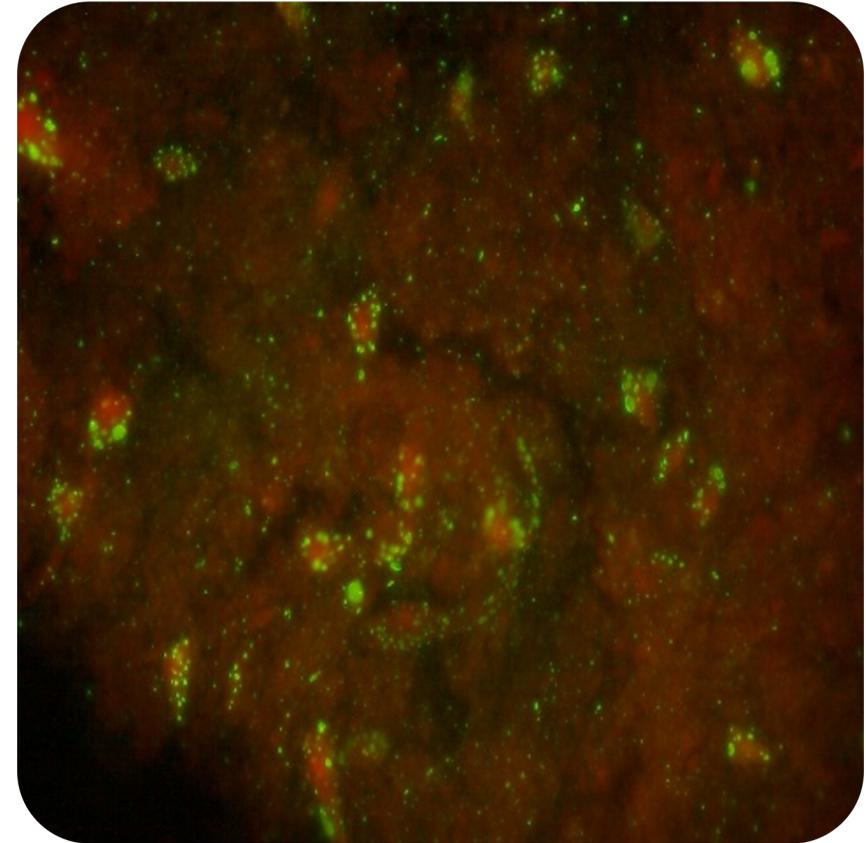
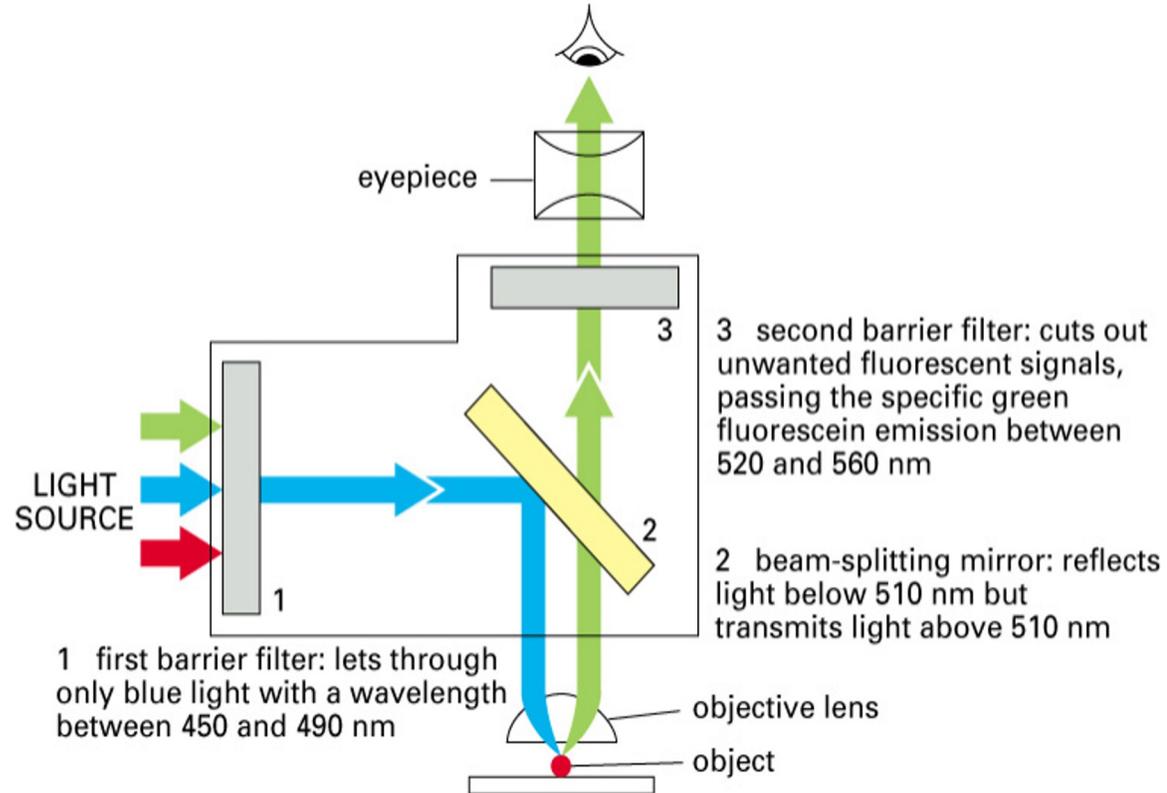
Horse positive for rabies by LFA (2020) in Assam

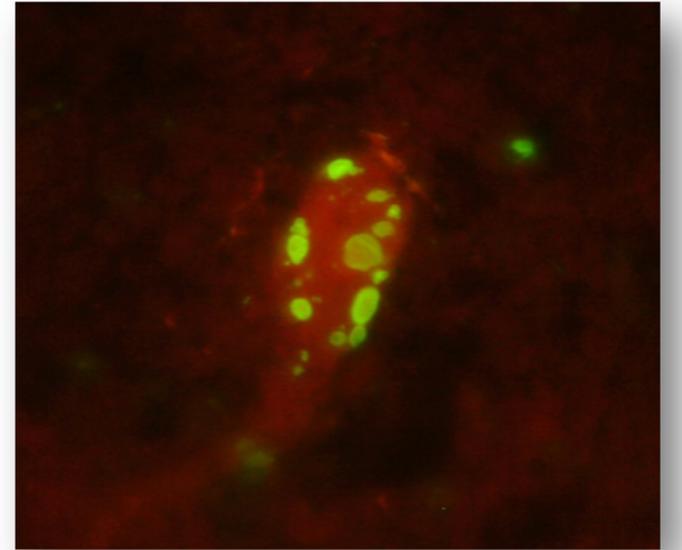
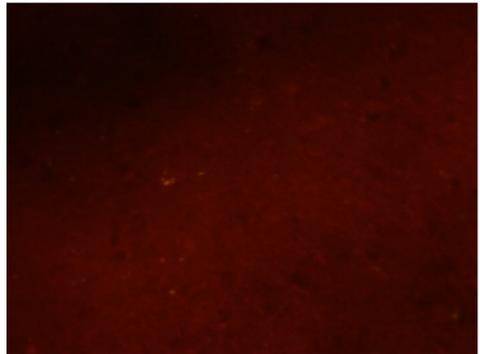
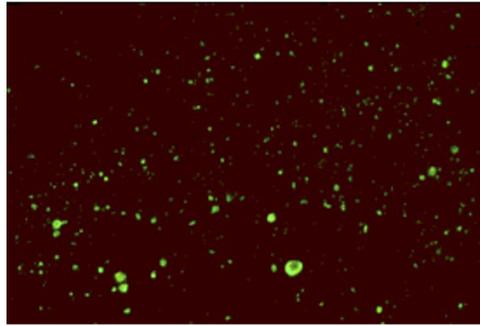
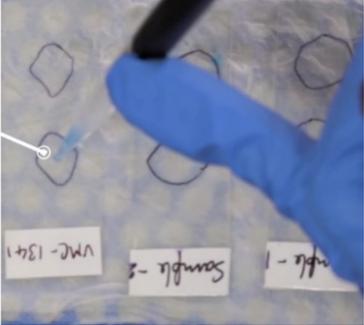
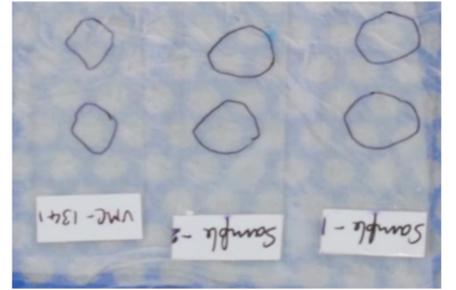
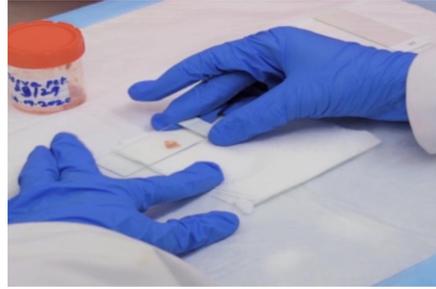
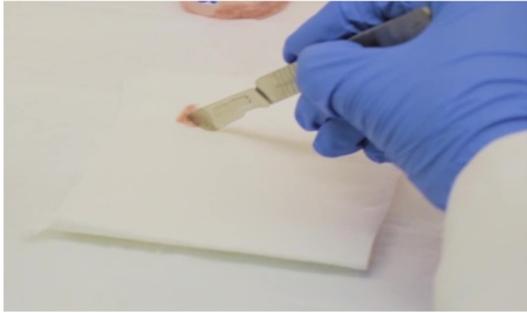


Horse from Assam Police Battalion positive by LFA



Direct Fluorescent Antibody (DFA) Test

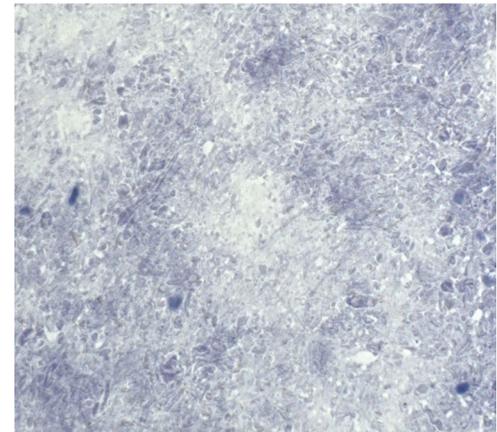
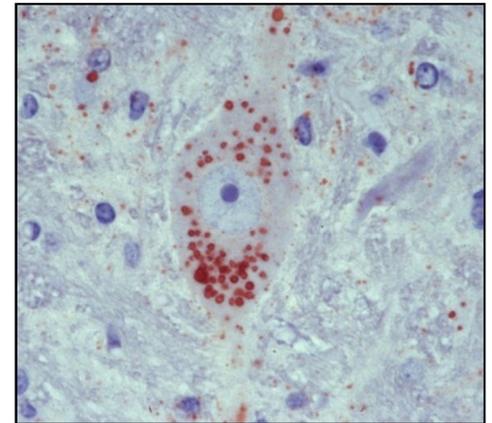




Direct Rapid Immunohistochemistry Test (dRIT)



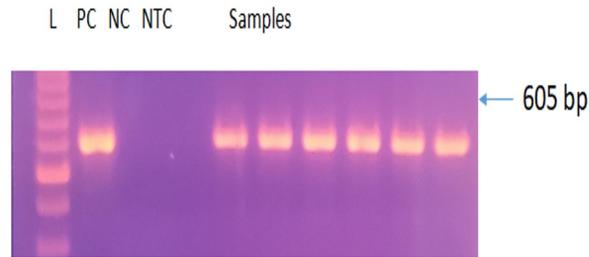
- Staining time 1 hr.
- Done at bench-top at ambient temperature.
- Does not require a fluorescent microscope or incubator.
- Only a standard light microscope is required.
- Permits rabies diagnosis under field conditions.
- Cost effective - technology transfer to developing world



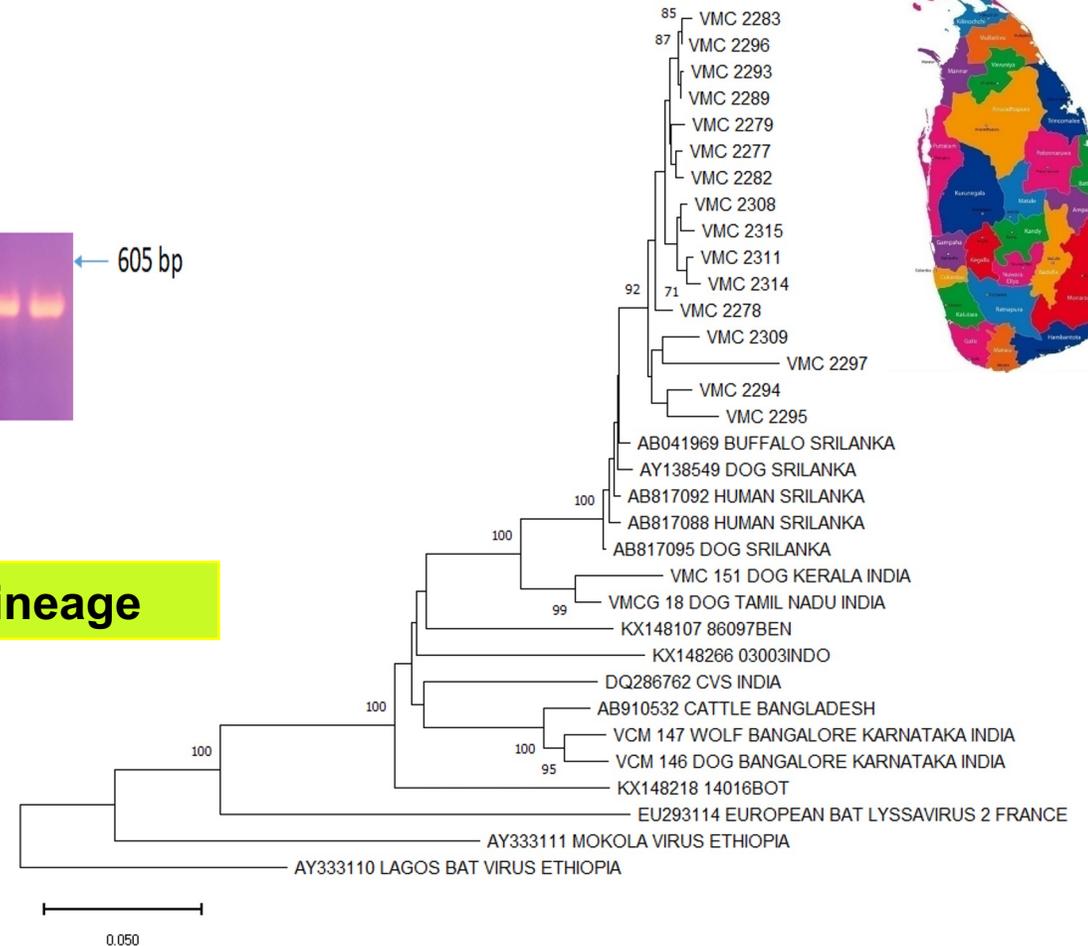
Molecular characterization of RABV from Sri Lanka

Samples received from: Dept. of rabies and vaccine QC., Medical Research Institute, Colombo 8, Sri Lanka on 20/01/2023

Samples list	No. of samples
Jackal	21
Cow	10
Dog	4
Goat	4
Cat	1
Deer	1
Total no.	41



Indian subcontinent lineage



World Organization for Animal Health (WOAH) (Founded as OIE) Ref Labs

Designated to pursue all scientific & Technical problems relating to rabies



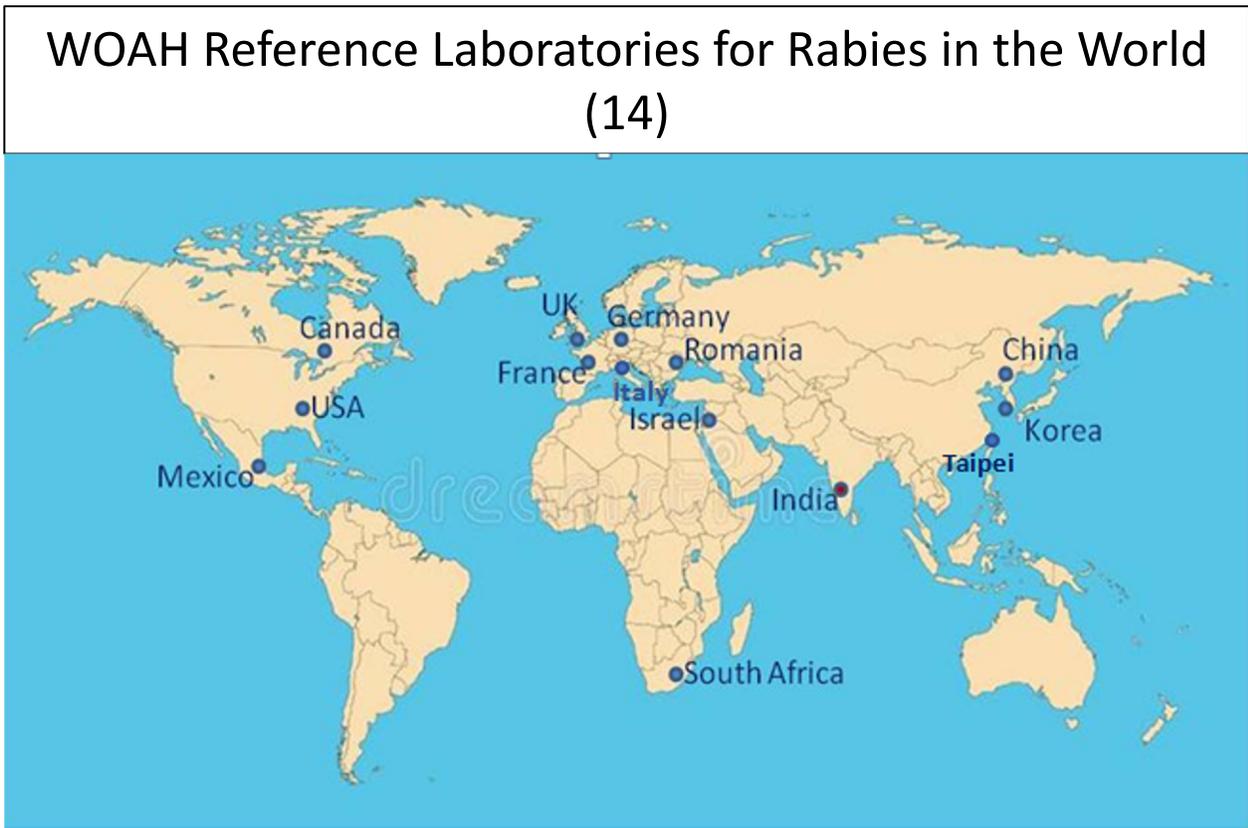
KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY
KVAFSU - CVA RABIES DIAGNOSTIC LABORATORY

 **OIE Reference Laboratory for Rabies**

Department of Veterinary Microbiology,
Veterinary College, Hebbal, Bengaluru - 560024

ಕೆವಿವಿಫ್‌ವಿಸ್‌ಯು - ಸಿವಿವಿ ರೇಬಿಸ್ ರೋಗನಿರ್ಣಯ ಪ್ರಯೋಗಾಲಯ
ವಿಶ್ವ ಪ್ರಾಣಿ ಆರೋಗ್ಯ ಸಂಸ್ಥೆ ಅನುಮೋದಿತ

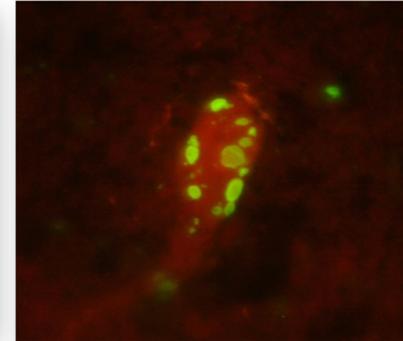
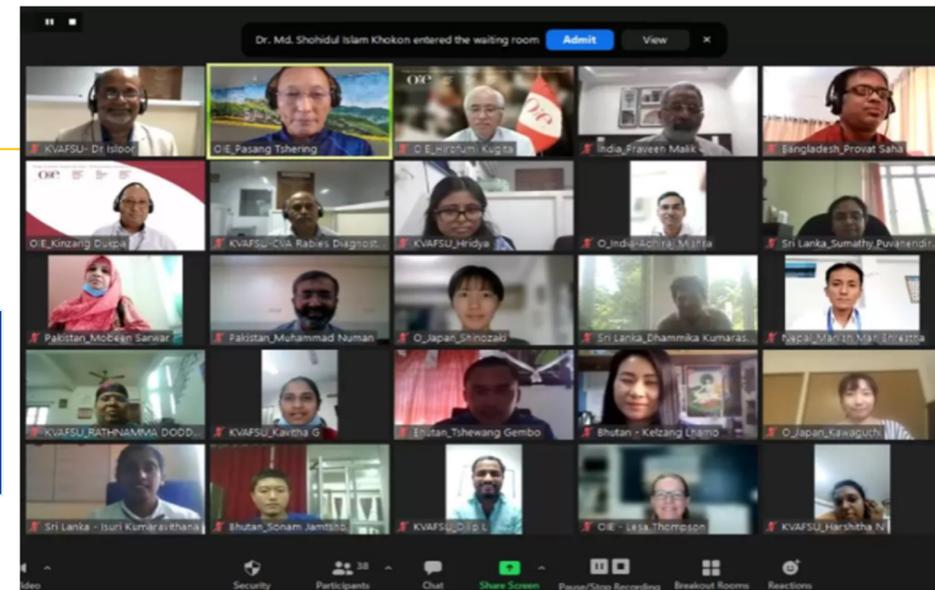
ಸೂಕ್ಷ್ಮ ಜೀವಾಣು ಶಾಸ್ತ್ರ ವಿಭಾಗ,
ಪಶುವೈದ್ಯಕೀಯ ಮಹಾವಿದ್ಯಾಲಯ, ಕಪಪಮೀವಿವಿ, ಹೆಬ್ಬಾಳ, ಬೆಂಗಳೂರು-560024



OIE Virtual training series on rabies

Diagnosis for SAARC Region 5th – 6th Nov 2020
(6 SAARC countries – Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka)

Brain sample collection by practicing vets using Occipital foramen method – User friendly and simple approach



Serology for SAARC Region 11th -13th Oct 2021 (6 SAARC countries - Bangladesh, Bhutan, India, Japan, Nepal, Pakistan, Sri Lanka)



WOAH RRAP- MR-KVAFSU Regional Training of Trainers on Mass Dog Vaccination

28th November to 2nd December, 2022



World Organisation for Animal Health
Founded as OIE

MISSION RABIES

Agenda
Regional Training of Trainers Workshop on Mass Dog Vaccination
28 November – 2 December 2022, Bengaluru, Karnataka, India

Bangladesh, Bhutan,
Cambodia, India, Indonesia,
Myanmar, Nepal, Philippines,
Srilanka Thailand

MDV – a priority

Oral Rabies Vaccine – a boon

A complementary tool for Canine Rabies Control – Community dogs

FNDR_14.06.2024



WOAH Sub-Regional Training Workshop on Animal Rabies Diagnosis for South Asia (18-21 January 2023, WOA Reference Laboratory, India)

Key topics

- Occipital foramen approach for brain sampling
- LFA
- DFA
- dRIT



14 government officials working on rabies control from Bangladesh, Bhutan, India, Nepal, Sri Lanka including an observer from Zambia



CVA Supported International Workshop on Animal Rabies Diagnosis 19th – 22nd Dec, 2023



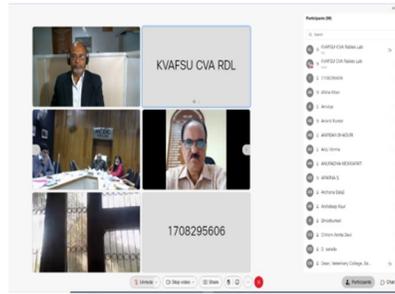
10 Participants from Africa, Timor Leste, Sri Lanka, India



Enhancing Animal Rabies Diagnosis in India

National level: Support by: WOAH RL, NCDC, Min. of Health & Family Welfare, Govt. of India, CVA

Virtual mode - 2022



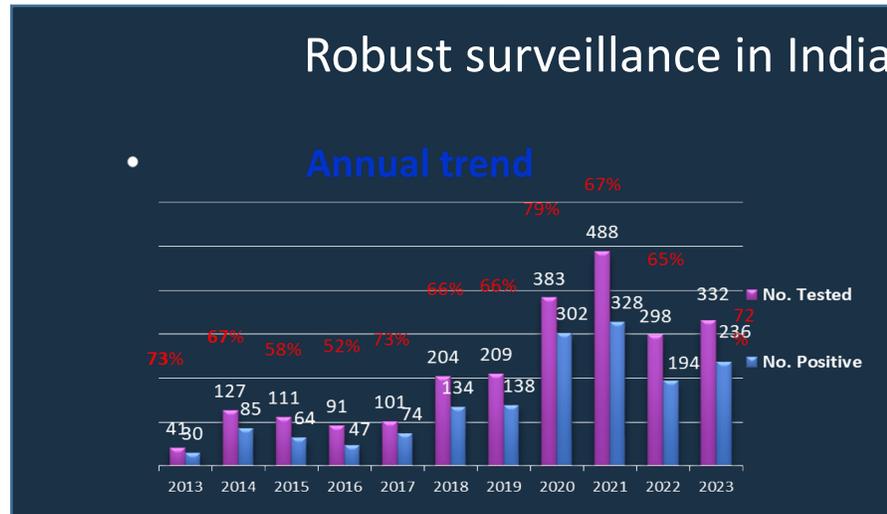
Hands on training - 2022, 2023



Subnational (State & UT) level: Support by: WOAH RL ; CVE ; DAHD, Govt. of India ; WHO-APCRI



Impact of the Training → Robust surveillance in India



Impact of the Training – South Asia

Brain sampling and rabies rapid test – Nepal

Dog



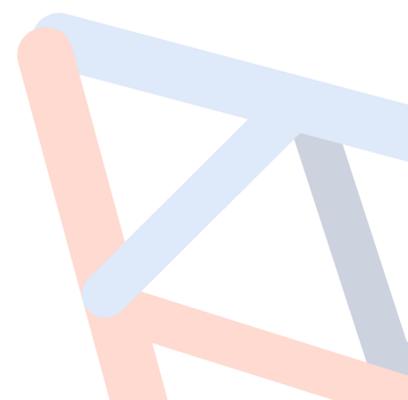
Cat



Cattle



Cattle brain sampling & rapid testing – Bangladesh



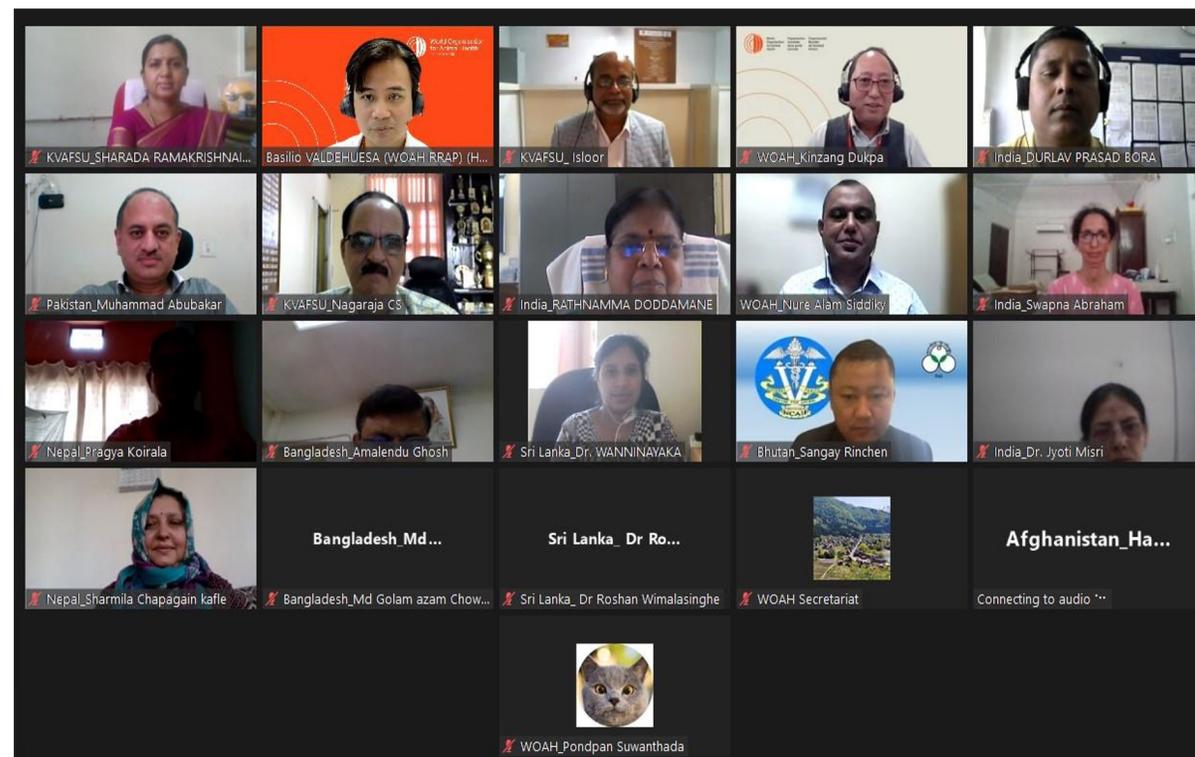


South Asia Rabies Laboratory Network (SA-RABNET)

Key objectives of the Network

- Sharing information and experiences amongst the **National Lead Rabies Laboratories (NLRLs)** of the **SAARC Members**
- **Building capacity**
- **Collaborative activities**
- **Foster partnerships**
- **WOAH RR AP & KVAFSU jointly coordination**

SA-RABNET launched on 6 April 2023
Bhutan – Chair
Nepal – Co-Chair
Members nominated by WOAHH Delegates



Connectivity within India



Countries connected in South Asia and South East Asia



To conclude....

Surveillance of rabies in animals based on reliable diagnostics - basis for control strategies

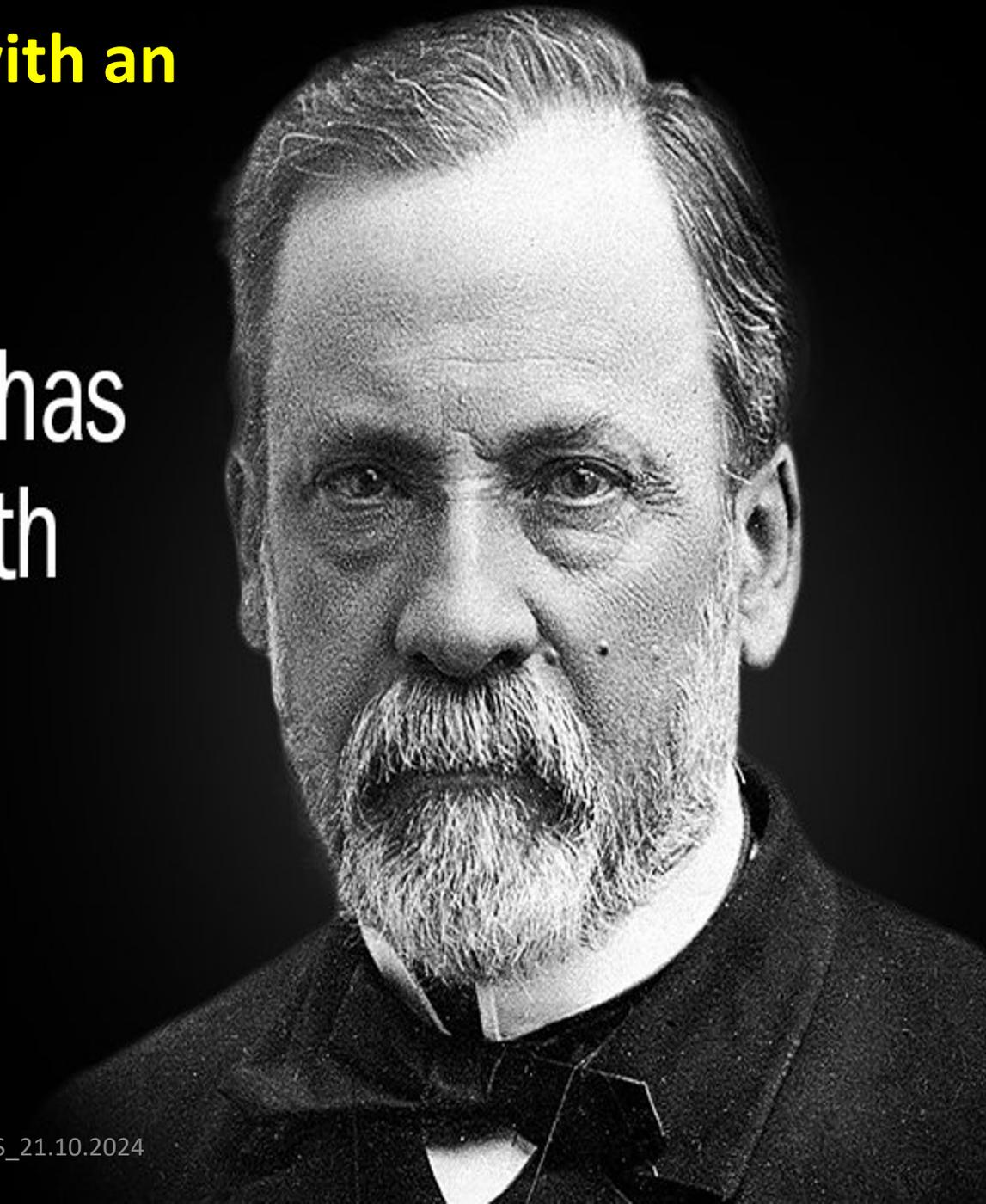
- Brain sampling revolutionized
- LFA user friendly, rapid
- DFA / PCR confirmatory
- dRIT to be made available
- Quality Conjugates / Fluorescent microscope
- Use of appropriate Controls

Improve surveillance of rabies in animals in South Asia

Lets work collectively against Rabies with an attitude of never give up....

Let me tell you the **secret** that has led me to my goal. My strength lies solely in my **tenacity**.

— *Louis Pasteur*



Thank you



Lets join hands to end human deaths due to dog mediated rabies