5.2.6. What can I do if I do not have a fluorescent microscope in my laboratory?

Although the fluorescent antibody test (FAT) remains the gold standard rabies diagnostic technique, alternative tests do exist.

The direct rapid immunohistochemical test (dRIT), uses only an ordinary light microscope to examine brain smears making it more suitable for laboratories with limited diagnostic infrastructure (e.g. at the regional level). The dRIT has not yet been approved by either OIE or WHO for reporting rabies cases, but several studies have validated the test in comparison to the FAT.

National rabies laboratories should be equipped to perform the FAT for validation of dRIT results obtained at regional laboratories prior to widespread use of this test. There is more detailed information on equipment, reagents and protocols for rabies diagnosis using the dRIT (here) and FAT (here). Click here to know about laboratories available for rabies diagnosis. See Sections 4.3 to 4.5 in the Rabies Surveillance Blueprint for further details on use of dRIT diagnostics.

More recently, even simpler rabies diagnostics tests that are cheap and easy to use have become available. These rapid immunodiagnostic tests (also called immunochromatographic or lateral flow tests, LFDs) for rabies diagnosis promise testing outside the laboratory, require virtually no equipment and minimal training, and produce a result in minutes.
Some studies using a rapid immunodiagnostic tests have concluded that it was are reliable for rabies diagnosis in laboratory and field studies, although some changes to the manufacturer’s recommended methodology were applied. However, a study testing six commercially available rapid rabies tests in controlled laboratory settings found them to be very unreliable compared to the gold standard FAT test. All six tests showed good specificity (they did not produce “false positive” results), but none demonstrated good sensitivity (they produced “false negative” results). Some tests performed better than others, and in some cases specific batches of the same test did better than others, but overall the results were disappointing.

Results of rapid immunodiagnostic tests for rabies. Photo: Friedrich Loeffler Institut

The rapid rabies tests have great future potential for supporting field based surveillance. Currently, they can be useful to rapidly identify positive rabies cases. However, negative test results should not be relied upon (especially if human exposures are involved) without further laboratory confirmation using the FAT. The membrane used in these tests can be stored, preferably in cool conditions, and RNA can eventually be extracted for further molecular confirmation and characterization using PCR and sequencing.

You can read more about studies using rapid immunodiagnostic tests here

FAT = Fluorescent antibody test
dRIT = Direct rapid immunohistochemical test
OIE = World Organisation for Animal Health
WHO = World Health Organization