



AHL LabNote Number 29

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Summary of Influenza A virus testing *Tim Pasma DVM, MSc, MBA and Davor Ojkic DVM, MSc, PhD*

STEP 1	VIRUS DETECTION TESTING	ANTIBODY DETECTION TESTING	
Test	Real-time PCR - matrix gene	ELISA, Multi-Screen	Agar gel immunodiffusion
Sample	Swabs in VTM (swine-nasal, birds-cloacal/tracheal), oral fluids, tissues.	Serum	
Use/advantage	Primary screening test targeting a conserved influenza virus gene. Detects all common Influenza A virus subtypes in multiple animal species, very sensitive, fast.	Primary screening test, detects antibody from all common Influenza A virus subtypes in multiple animal species.	Screening test used for avian samples.
Disadvantage	Cannot determine the subtype of the virus.	Cannot determine the subtype of the virus to which animals were exposed. Cannot be used on paired samples to determine a 4-fold titer change/seroconversion.	



STEP 2	VIRUS SUBTYPING		ANTIBODY SUBTYPING
Sample	PCR positive sample		Serum
Test	PCR typing for specific subtypes	Hemagglutinin gene sequencing	Hemagglutination inhibition test H1N1, H3N2, H3N8, H7N7 – other subtypes may be available upon request.
Use/advantage	Swine: H1N1, H1N2, H3N2 Turkeys: H5, H7, also H1N1 and H3N2 All other avian species: H5 & H7 Simpler, faster than sequencing.	Covers all common Influenza A virus subtypes. Allows strain identification and comparison of various viruses.	Use on paired samples to determine a 4-fold titer change/seroconversion.
Disadvantage	Detects only H1N1, H1N2, H3N2, H5 and H7 subtypes. Weak positives may not have enough virus for typing.	Weak positives may not have enough virus for typing.	Subtype/strain specific depending on antigen used.

OTHER TESTS

Test	Immunohistochemistry
Sample	Formalin-fixed tissues
Use/advantage	Used on fixed tissues when fresh tissues are not available, or as a part of postmortem procedures. Detects all common Influenza A virus subtypes.
Disadvantage	Cannot determine the virus subtype.

For further information or to request tests, please email ahlviro@uoquelp.ca