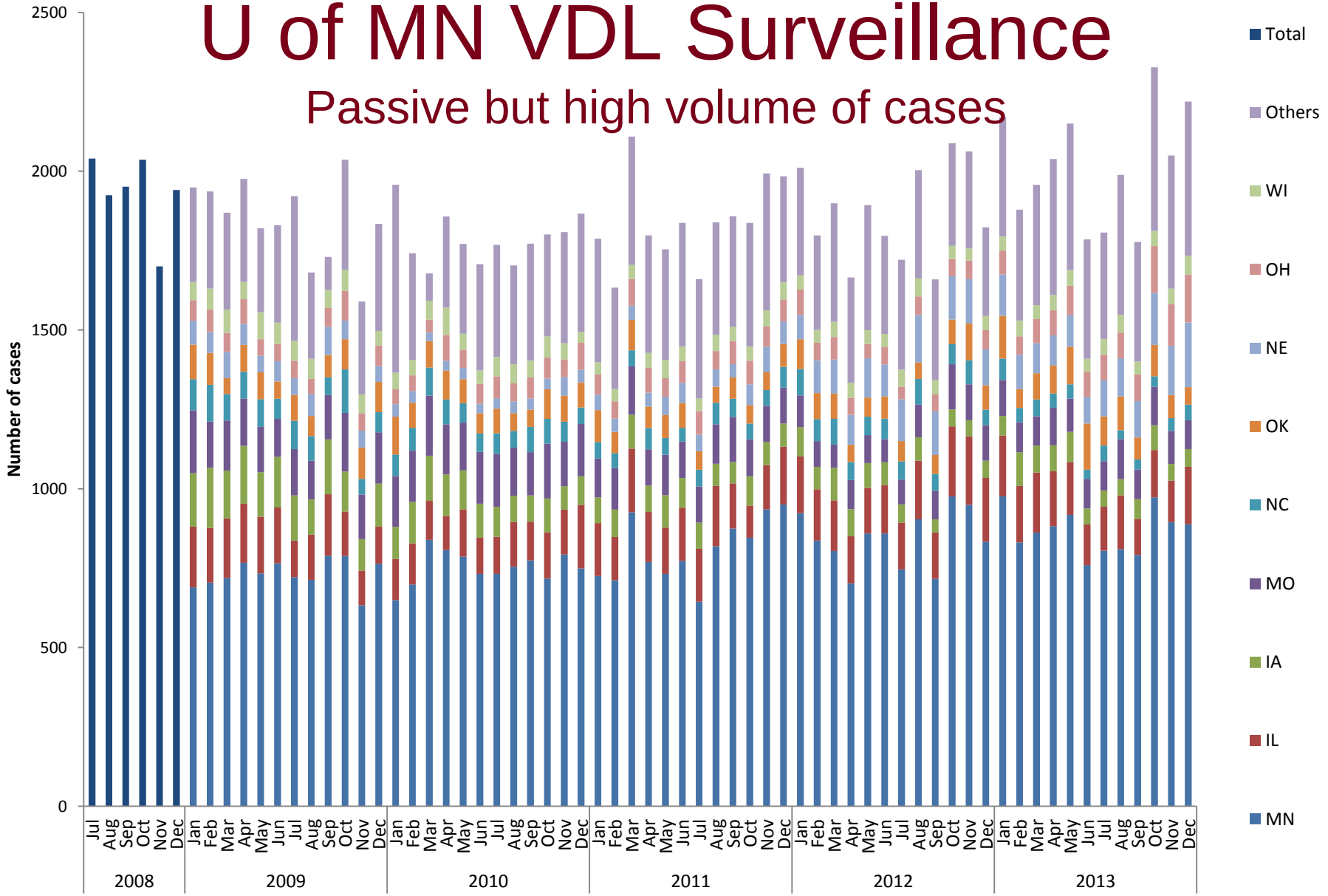
Surveillance Update

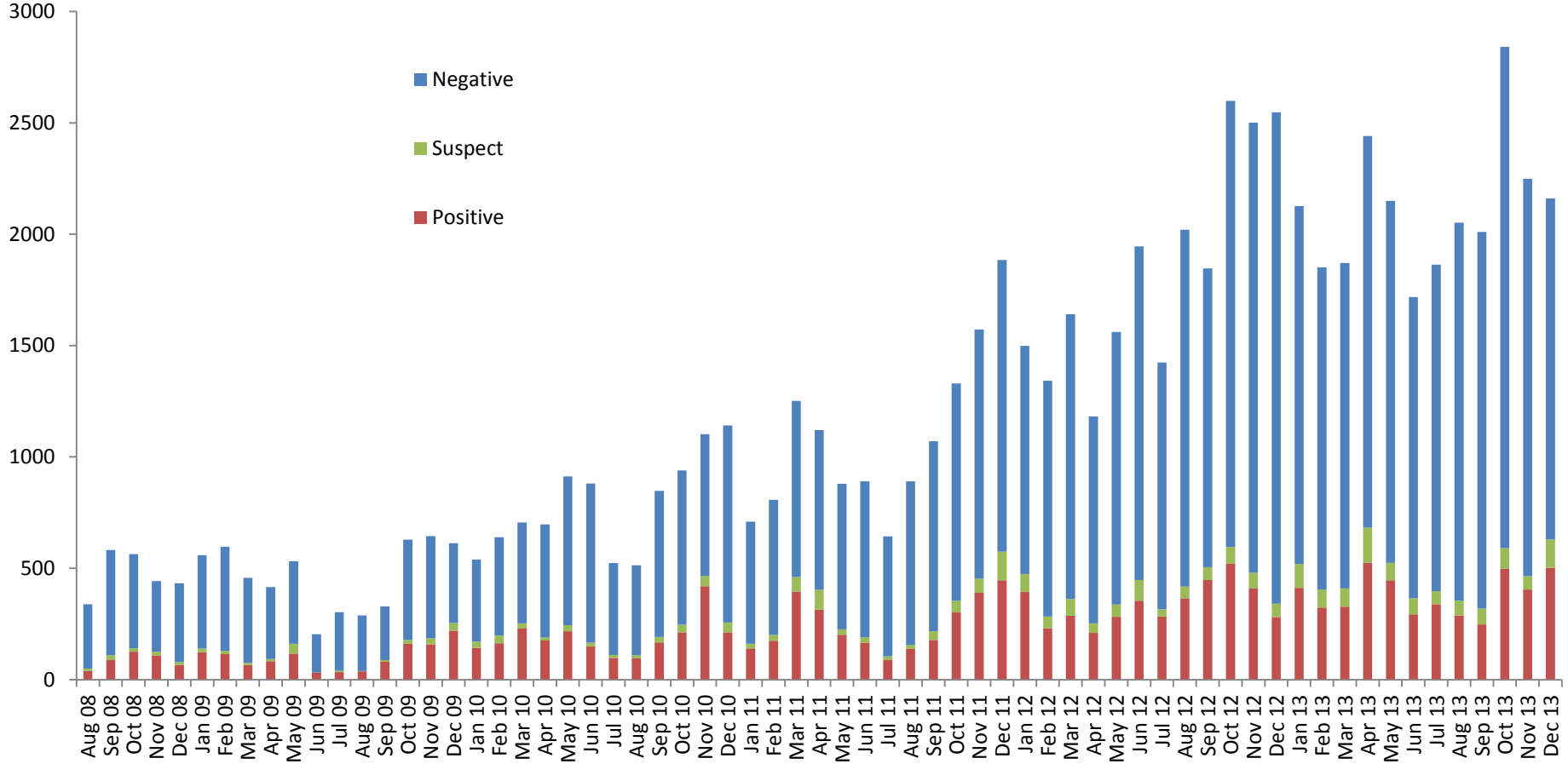
U of MN Veterinary Diagnostic Laboratory Data

U of MN VDL Surveillance

Passive but high volume of cases



Number of flu PCR tests per month
Aug 2008 to Dec 2013



Flu A Matrix RRT-PCR test

- Routine and commercially available
  - Sensitive 98% and Specific 98%
- Sample types:
  - Respiratory tract samples (tissues or secretions)
  - Bronchial swabs
  - Nasal swabs
  - Oral fluids
  - Tracheal swabs
  - Aerosols
  - Water
  - Environment

Flu A Matrix Real-Time RT-PCR test

- More sensitive than NP PCR or Immunoassay or Histopathology or IHC or VI
- Semi-quantitative
  - (Ct values →lower Ct = higher quantity of viral RNA)

Which Sample Type Is Best?

ISU-VDL and UMN-VDL Flu Surveillance (2 years of shared data)

		Flu A Matrix PCR				Total	Ct<35
		Ct<25	Ct 25-<30	Ct 30-<35	Ct 35-<40		
Lung	# VI attempted	353	185	121	336	995	659
	# VI Positive	334	158	35	13	540	527
	VI Success rate	94.6%	85.4%	28.9%	3.9%	54.3%	80.0%
Nasal Swab	# VI attempted	156	147	160	8	471	463
	# VI Positive	129	91	37	0	257	257
	VI Success rate	82.7%	61.9%	23.1%	0.0%	54.6%	55.5%
Oral Fluid	# VI attempted	36	62	119	0	217	217
	# VI Positive	15	17	11	NA	43	43
	VI Success rate	41.7%	27.4%	9.2%	NA	19.8%	19.8%

SIV VI success rate especially on oral fluid is relatively low and needs improvement

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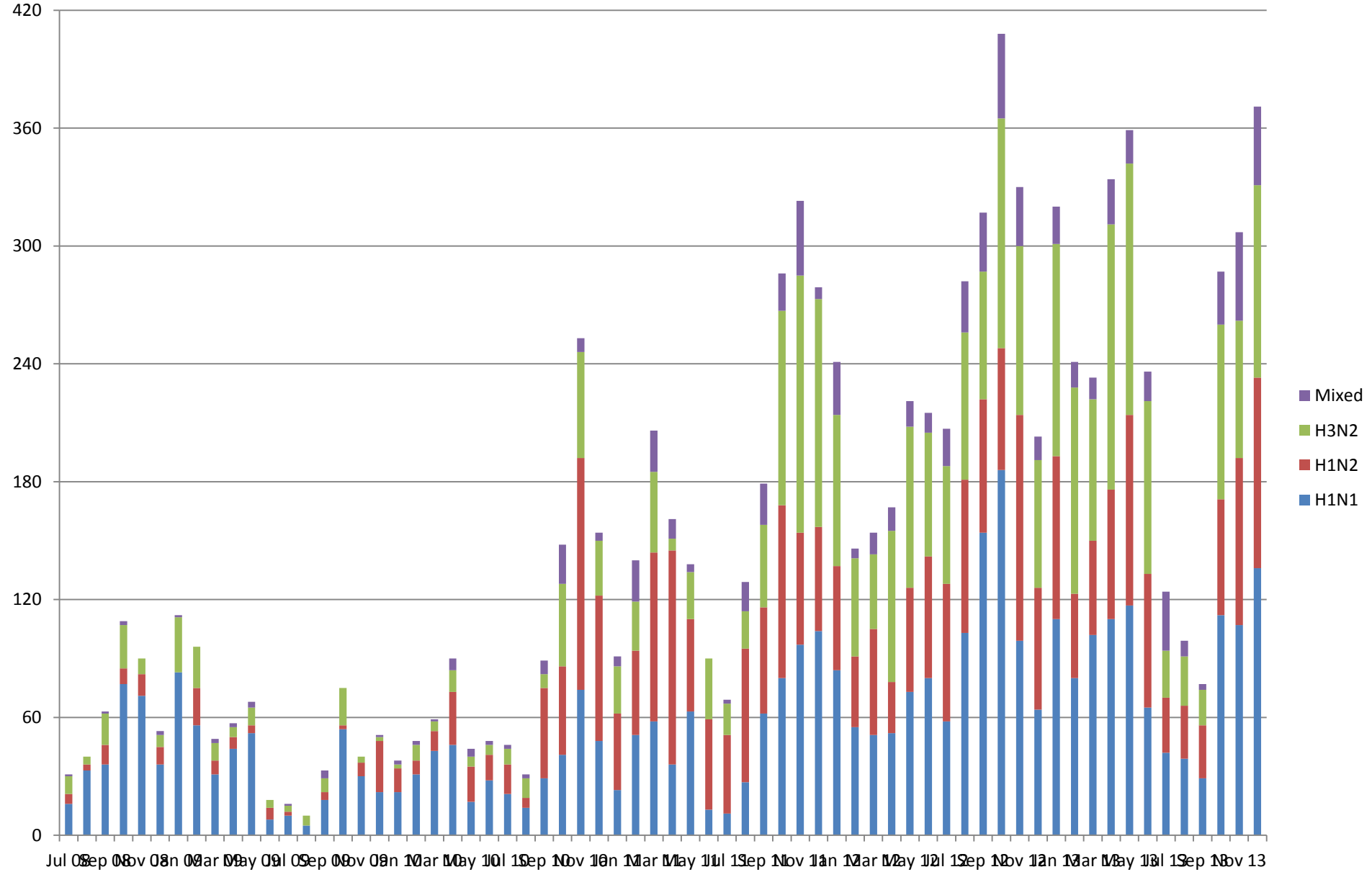
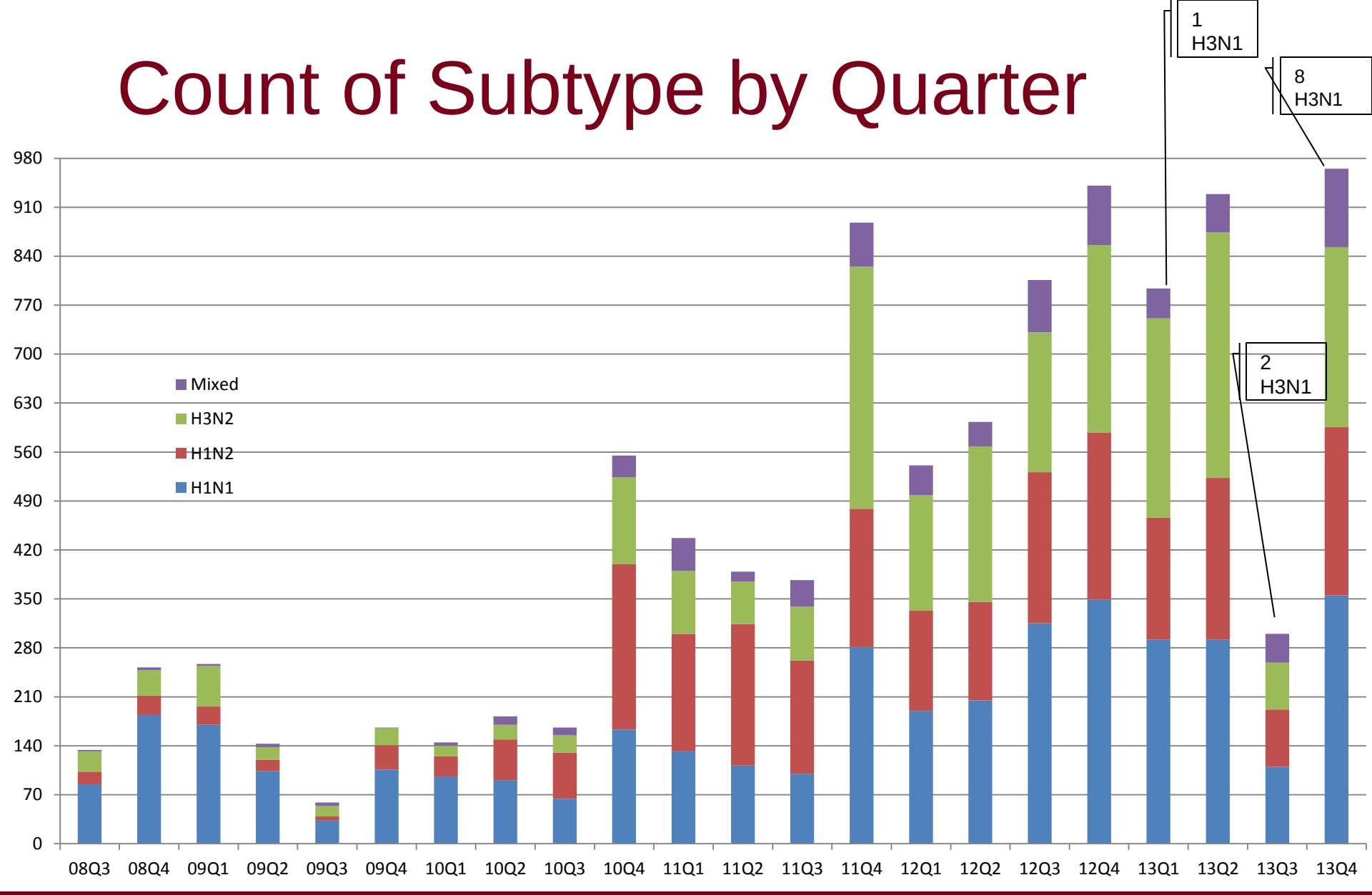
Source: Dr JQ Zhang

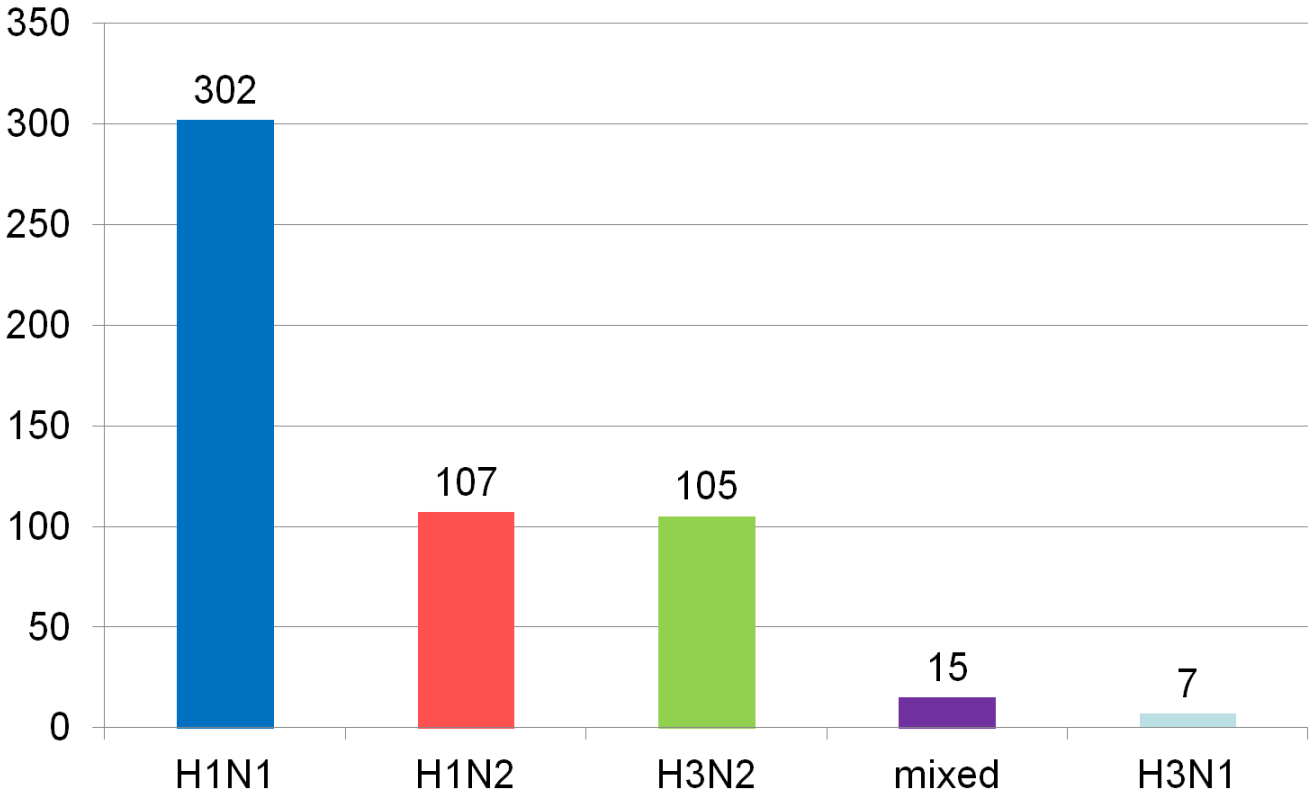
Count of Subtype by Month



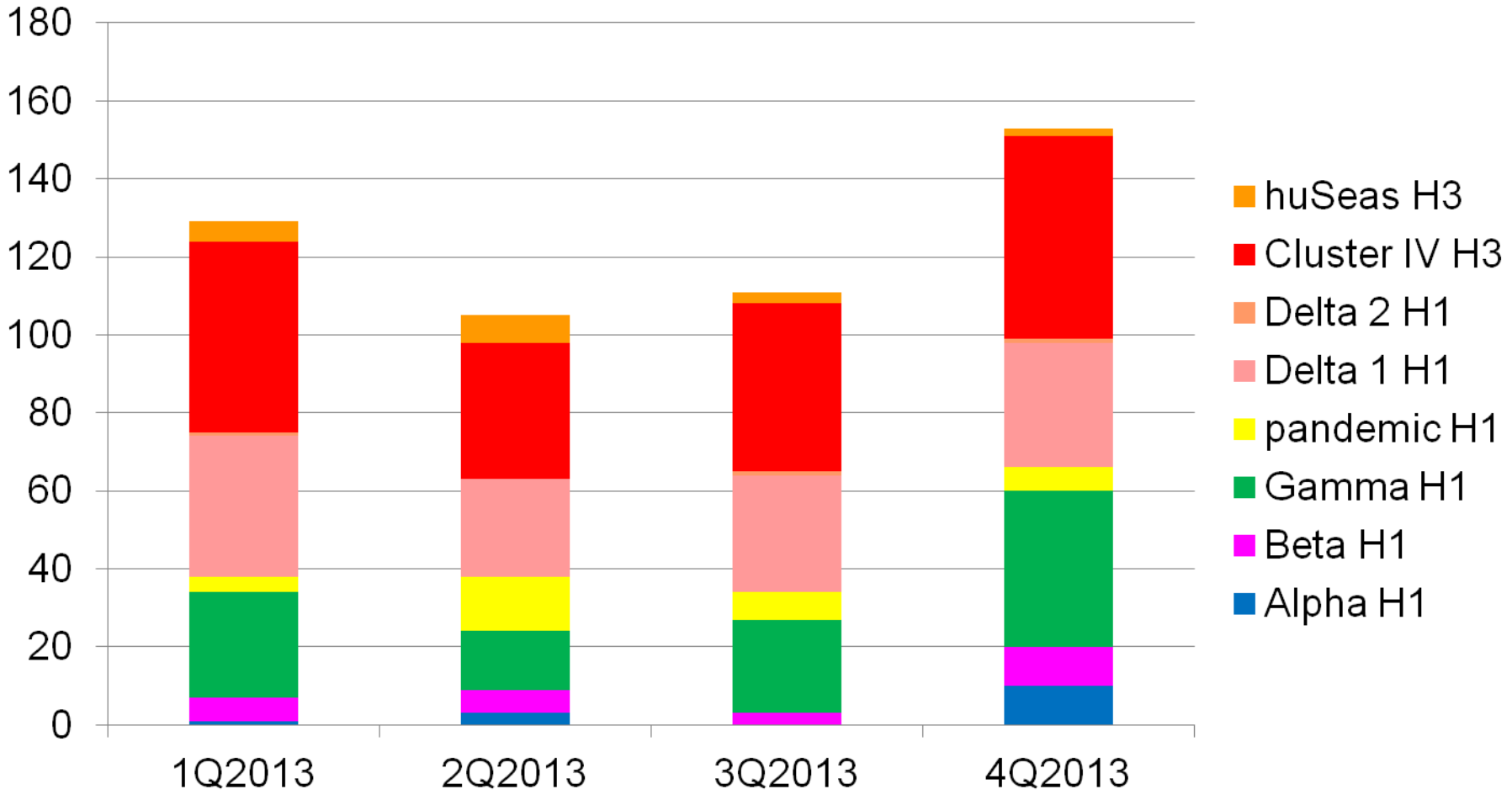
Count of Subtype by Quarter



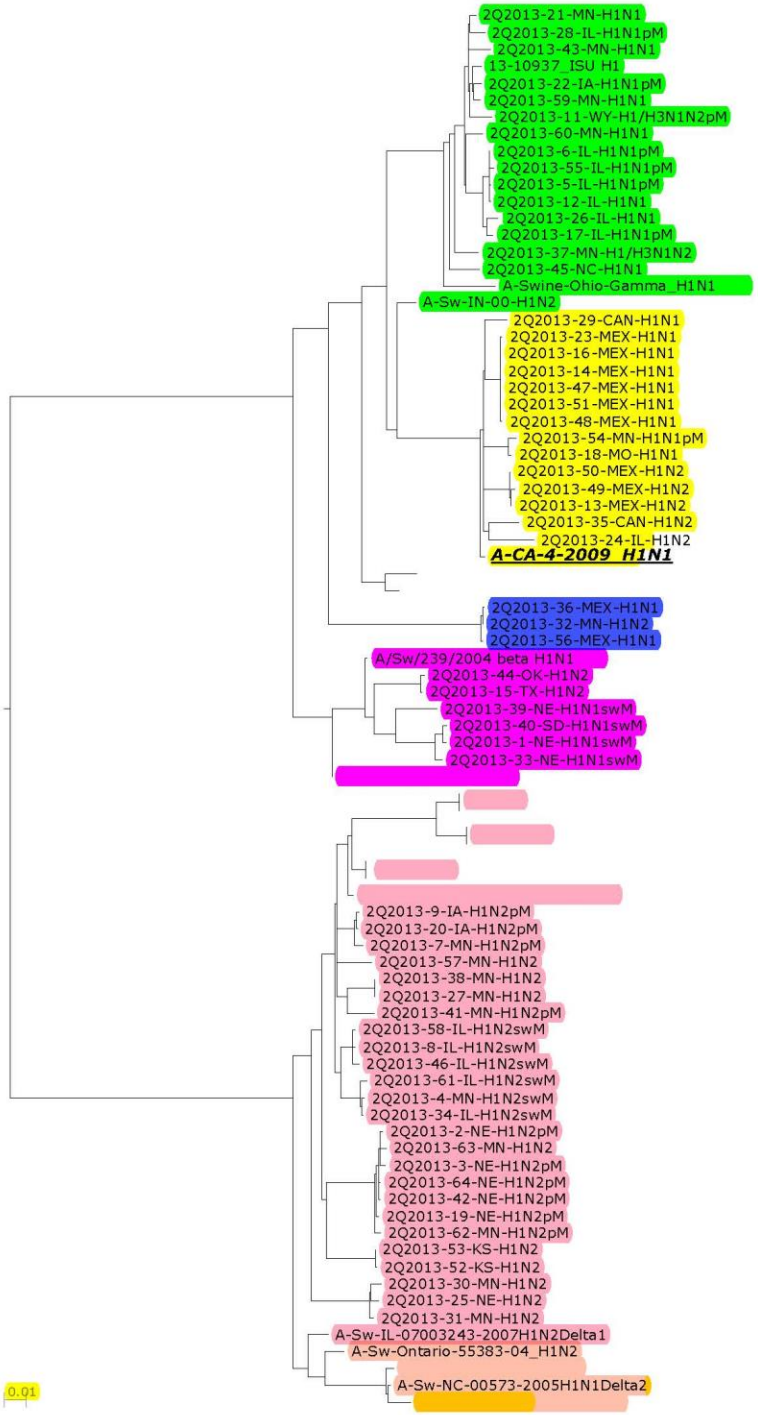
Flu Subtypes 2014 to date



Count of Flu Cluster by Quarter 2013



2Q2013 H1 Tree



Gamma

pH1N1

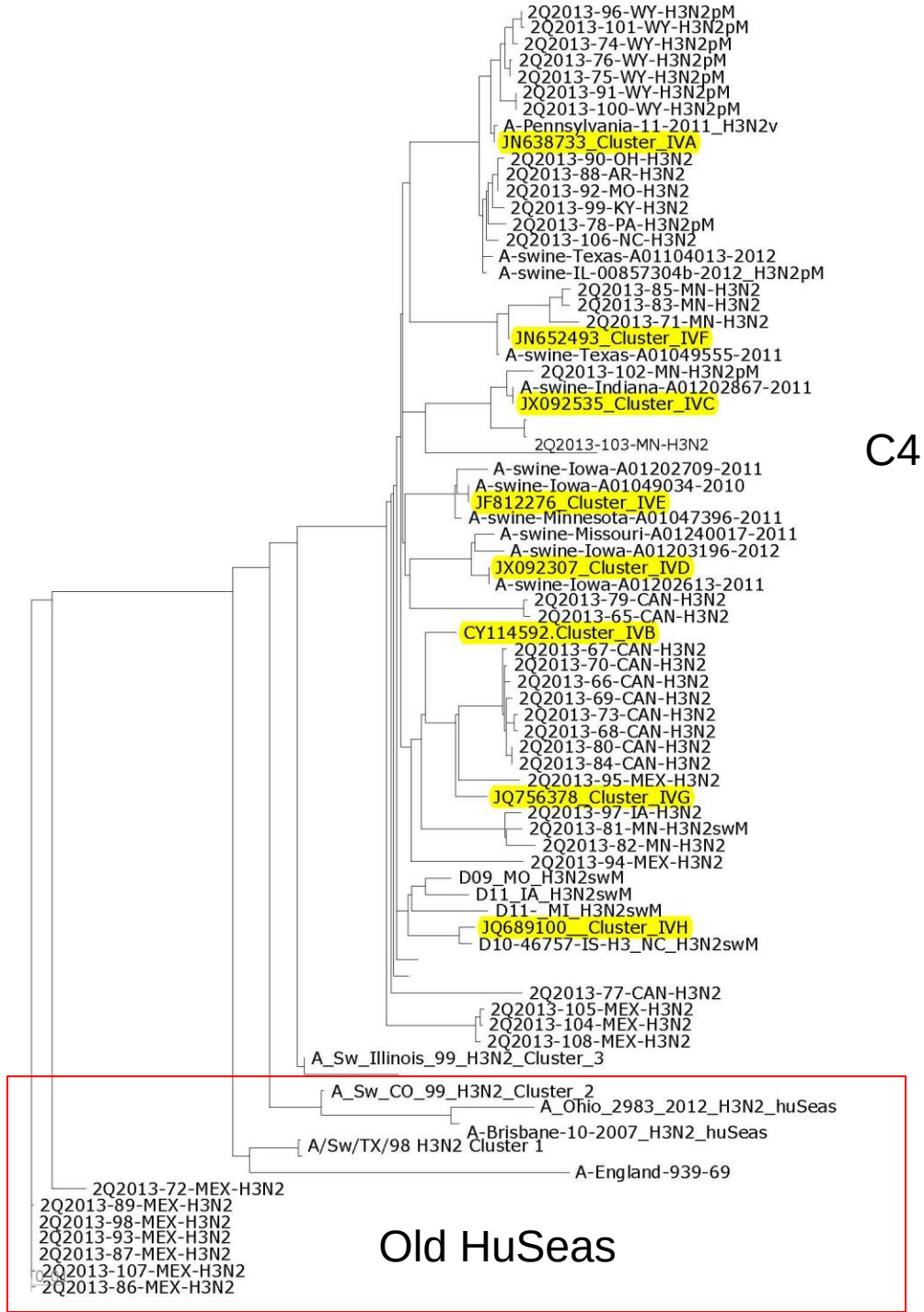
Alpha

Beta

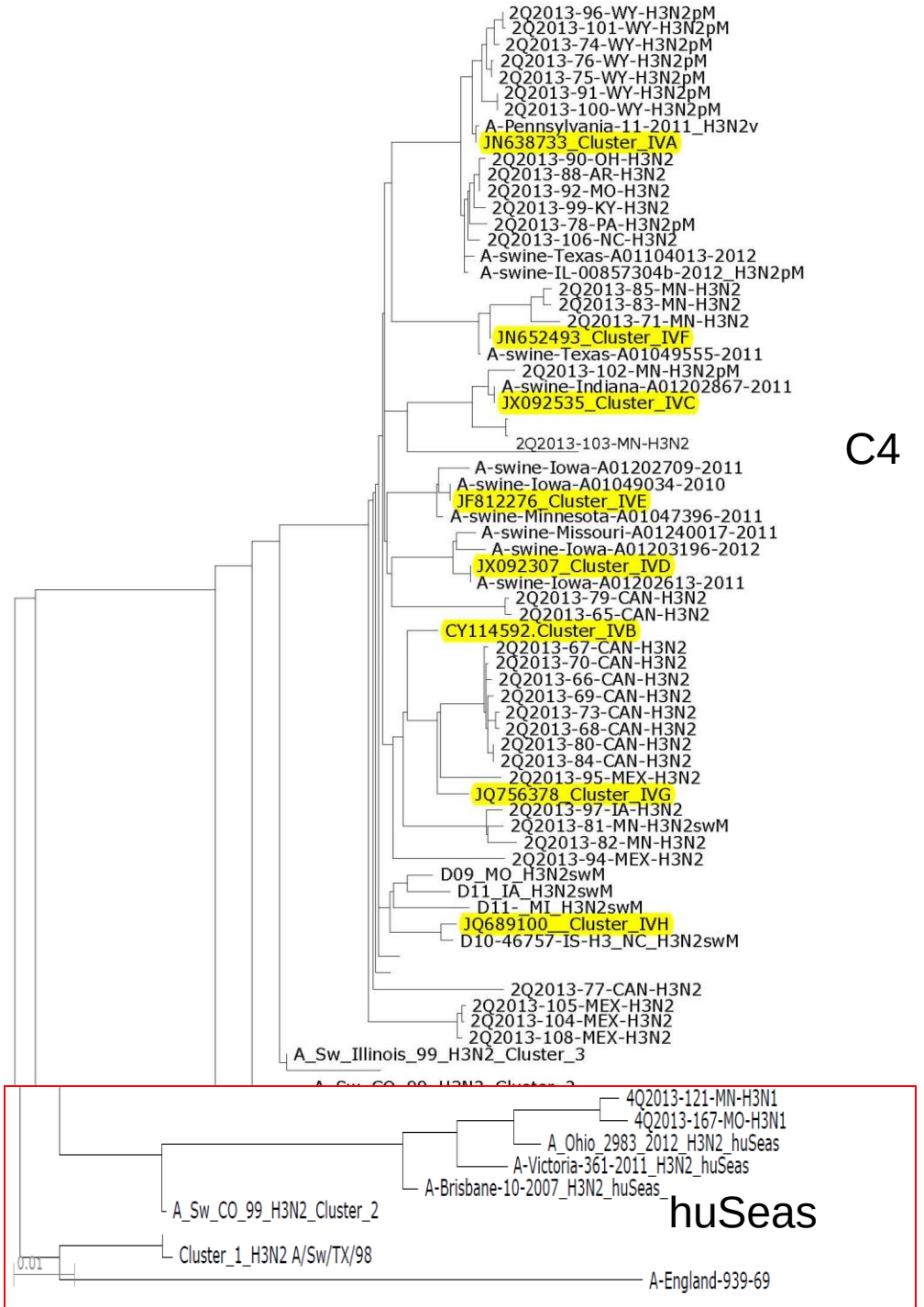
Delta 1

Delta 2

2Q2013 H3 Tree



4Q2013 H3 Tree



C4

huSeas

Surveillance Summary

- Flu is common year round with spring and fall peaks
- Subtypes H1N1, H1N2, H3N2, most common, in almost equal proportions,
- H3N1 also present
- 6 HA clusters +/- HuSeas H3 spillover into pigs