



Orthoavulavirus javaense: Are pigeons a threat to poultry?

EURL AI/ ND Meeting, Mestre, Italy

Nina Wolfrum, PhD

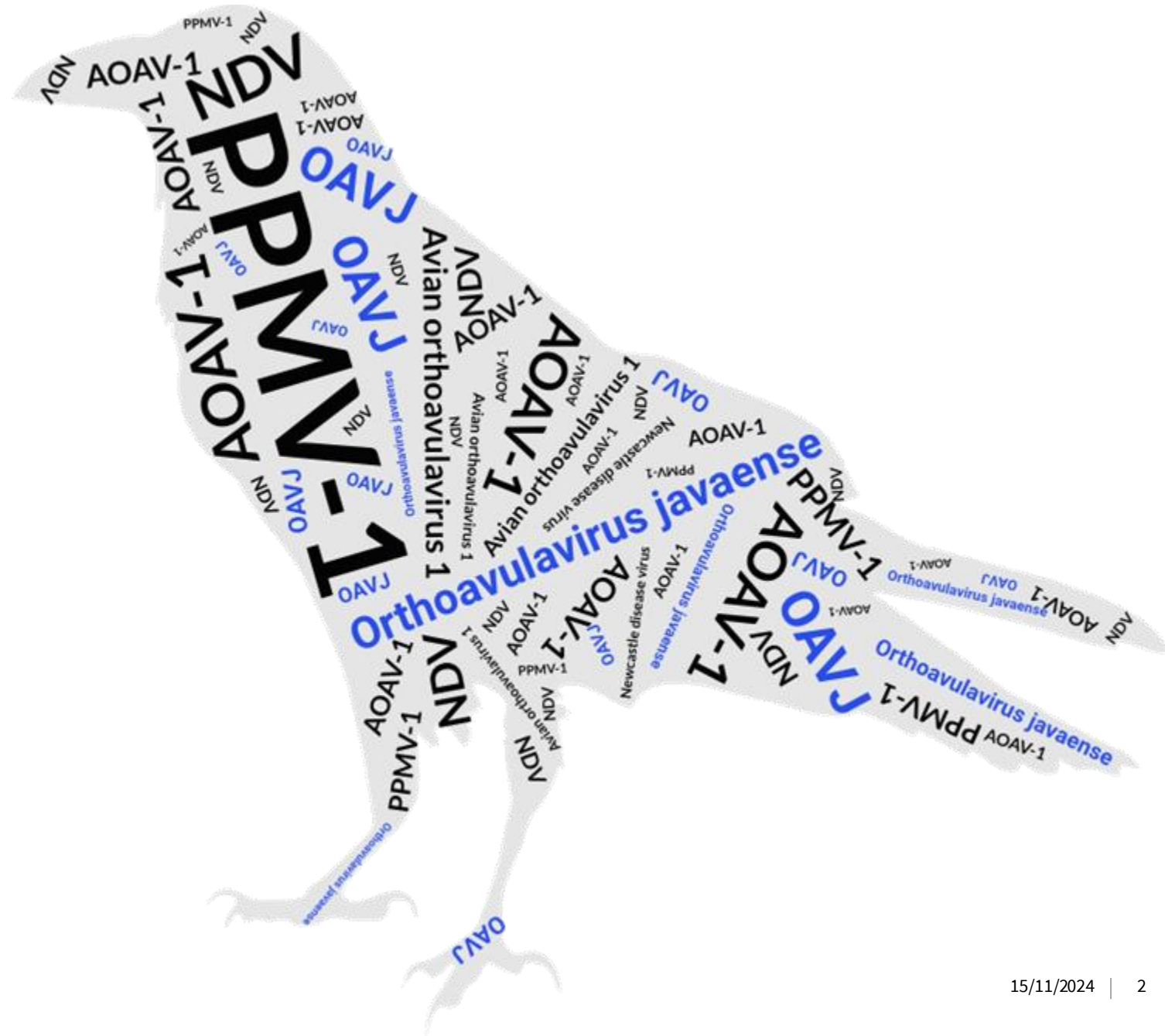
11 October 2024

History of the taxon

according to the International Committee on Taxonomy of Viruses (ICTV)

Species

- 1971 Newcastle disease virus
- 2016 Avian avulavirus 1
- 2018 Avian orthoavulavirus 1
- 2022 Orthoavulavirus javaense



Background

- Initial study in Zurich (2020 - 2021) revealed 10 % of feral pigeons without clinical signs were positive for OAVJ
- At the same time two outbreaks of NCD in poultry were detected → both were caused by PPMV-1 (Genotype VI.2.1.1.2.2)
- > 85% of Swiss Poultry have access to free range (2023)

Questions

1. Prevalence of OAVJ in feral pigeons in Zurich compared to other Swiss cities?
→ Evidence-based risk assessment of the possible transmission of OAVJ to domestic poultry.
2. Does pigeon management has an impact on pigeon health?
→ Different pigeon management in different Swiss cities.
→ Study on the occurrence of Chlamydiaceae in Swiss pigeons:

Chlamydia positive pigeons: Zurich (27.5%) > Bern (17.4%) ≥ Lucerne (15.5%)

Article

Screening of Healthy Feral Pigeons (*Columba livia domestica*) in the City of Zurich Reveals Continuous Circulation of Pigeon Paramyxovirus-1 and a Serious Threat of Transmission to Domestic Poultry

Désirée Annaheim ¹, Barbara Renate Vogler ¹, Brigitte Sigrist ¹, Andrea Vöggtlin ^{2,3}, Daniela Hüsey ^{2,3}, Christian Breidler ⁴, Sonja Hartnack ⁵, Christian Grund ⁶, Jacqueline King ⁶, Nina Wolfrum ^{1,*,†} and Sarah Albini ^{1,*,†}

RESEARCH ARTICLE

Chlamydiaceae in wild, feral and domestic pigeons in Switzerland and insight into population dynamics by *Chlamydia psittaci* multilocus sequence typing

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Pigeon-management in Swiss Cities

	Aarau	Basel*	Bern	Chur*	Geneva*	Lausanne*	Luzern*	Schaffhausen	St. Gallen*	Winterthur	Zurich	
						City	EPFL					
Shooting	-	(+)	-	-	(+)	(+)	-	(+)	-	(+)	-	+
Pigeon loft	2	-	8	1	(1)	1	1	2	1	-	2	-

* Pigeon are shot at the rail stations

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						City	EPFL					
Shooting	-	(+)	-	-	(+)	(+)	-	(+)	-	(+)	-	+
Pigeon loft	2	-	8	1	(1)	1	1	2	1	-	2	-
Exchange of eggs	+	-	+	+	?	+	+	+	+	-	+	-
Feeding in the loft	+	-	+	+	?	-	-	(+)	-	-	+	-
Feeding ban in the city	(-)	+	-	-	+	+	-	+	-	-	+	+
Education	-	+	+	+	?	+	+	+	+	+	+	(+)
No of pigeons/ city	1500	6500	1500	?	?	?	?	2500	1300	?	?	16000
No of pigeons/ capita	0.07	0.03	0.01	?	?	?	?	0.03	0.03	?	?	0.04

Pigeon-management in Swiss Cities

	Bern
Shooting	-
Pigeon loft	8
Exchange of eggs	+
Feeding in the loft	+
Feeding ban in the city	-
Education	+
No of pigeons/ city	1500
No of pigeons/ capita	0.01

Exclusive in Bern:

- Pigeons in the lofts are ringed and chipped
- Sterilisation
- PPMV-1 vaccination
- treatment against parasites
 - Frontline: fleas, ticks
 - Paracur®: Broad-spectrum anthelmintic agent
 - Baycox: Coccidiosis

Pigeon-management in Swiss Cities

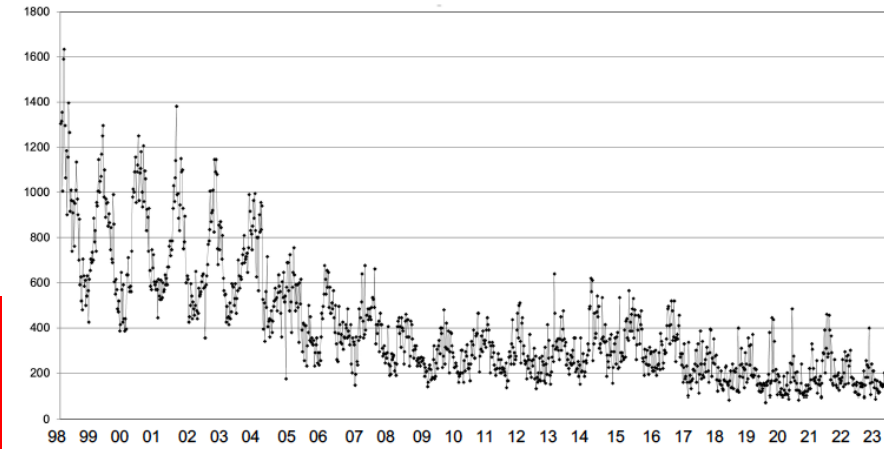
	Aarau	Basel*	Bern	Chur*	Geneva*	Lausanne*	Luzern*	Schaffhausen	St. Gallen*	Winterthur	Zurich	
						City	EPFL					
Shooting	-	(+)	-	-	(+)	(+)	-	(+)	-	(+)	-	+
Pigeon loft	2	-	8	1	(1)	1	1	2	1	-	2	-
Exchange of eggs	+	-	+	+	?	+	+	+	+	-	+	-
Feeding in the loft	+	-	+	+	?	-	-	(+)	-	-	+	-
Feeding ban in the city	(-)	+	-	-	+	+		-	+	-	+	+
Education	-	+	+	+	?	+		+	+	+	+	(+)
No of pigeons/ city	1500	6500	1500	?	?	?		2500	1300	?	?	16000
No of pigeons/ capita	0.07	0.03	0.01	?	?	?		0.03	0.03	?	?	0.04

Pigeon-management in Swiss Cities

Shooting
Pigeon loft
Exchange of eggs
Feeding in the loft
Feeding ban in the city
Education
No of pigeons/ city
No of pigeons/ capita

Lausanne*	
City	EPFL
(+)	-
1	1
+	+
-	-
	+
	+
	?
	?

Figure 1. Nombre total de pigeons (en ordonnée) observés à 9 endroits du centre-ville (-♦-)



Sample collection

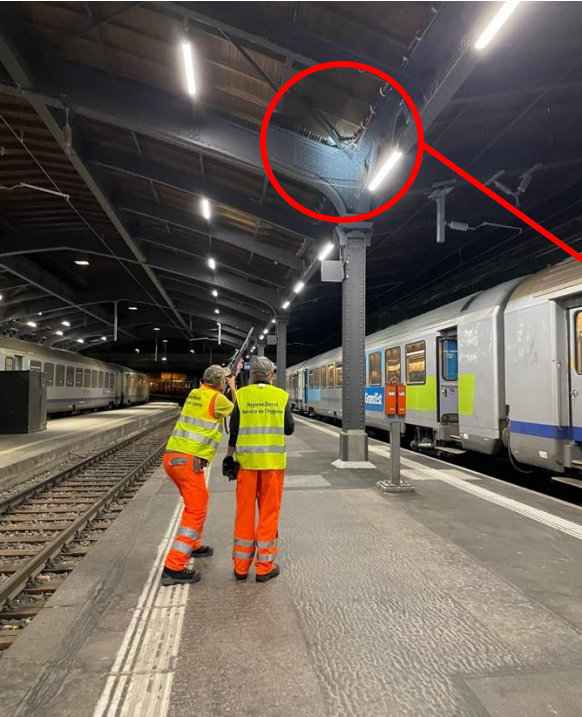
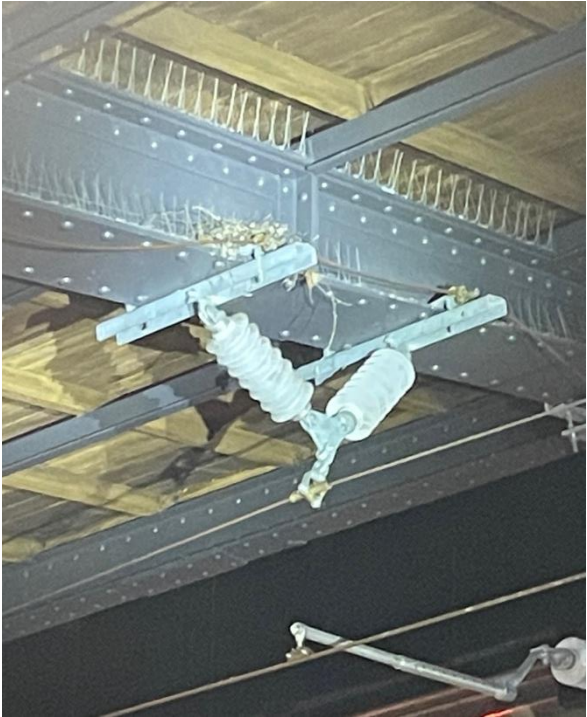
- Choana-cloacal swabs in pigeon lofts
- Chur turned out to be a pigeon loft that can not be closed
- No pigeon lofts known in Ticino
- No access to the presumed pigeon loft in Geneva
- Basel, Geneva, Lausanne, (St. Gallen, Chur): Samples from shot pigeons at the stations



★ Shot ● Pigeon loft * Pigeon loft/ shot

Erstellt mit Datawrapper

Sampling in Basel



Sampling in Bern



Sampling in Aarau, Luzern

Aarau



Town hall Aarau



Town hall Luzern



Sampling in Lausanne

Eglise Saint-François



EPFL



Preliminary results and summary

	Aarau	Basel*	Bern		Chur*	Geneva*	Lausanne	Luzern*	Schaffhausen	St. Gallen*	Winterthur	Zurich	Others
			R	nR									
OAVJ	0/34	6/61 (9.8%)	0/136	0/129	-	0/25	1/16 (6.3%)	0/11	6/30 (20%)	-	0/74	2/15 (13.3%)	4/24 (16.7%)

OAVJ was detected in pigeons from Basel, Lausanne, Schaffhausen, and Zurich.

→ In Basel and Zurich, the positive samples are spread over the entire sampling period.

→ In Lausanne and Schaffhausen there was an accumulation at a certain time point → acute outbreaks?

In cities with pigeon lofts, OAVJ seems to be limited to acute outbreaks.

In contrast, OAVJ appears to circulate continuously in pigeons in cities without pigeon lofts.

Outlook

- Sampling has been completed in Bern and Winterthur.
- Samples are still being taken in the other cities.
- If possible, sequencing of selected samples.

Thanks to...

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National Reference Laboratory for
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Aarau

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