

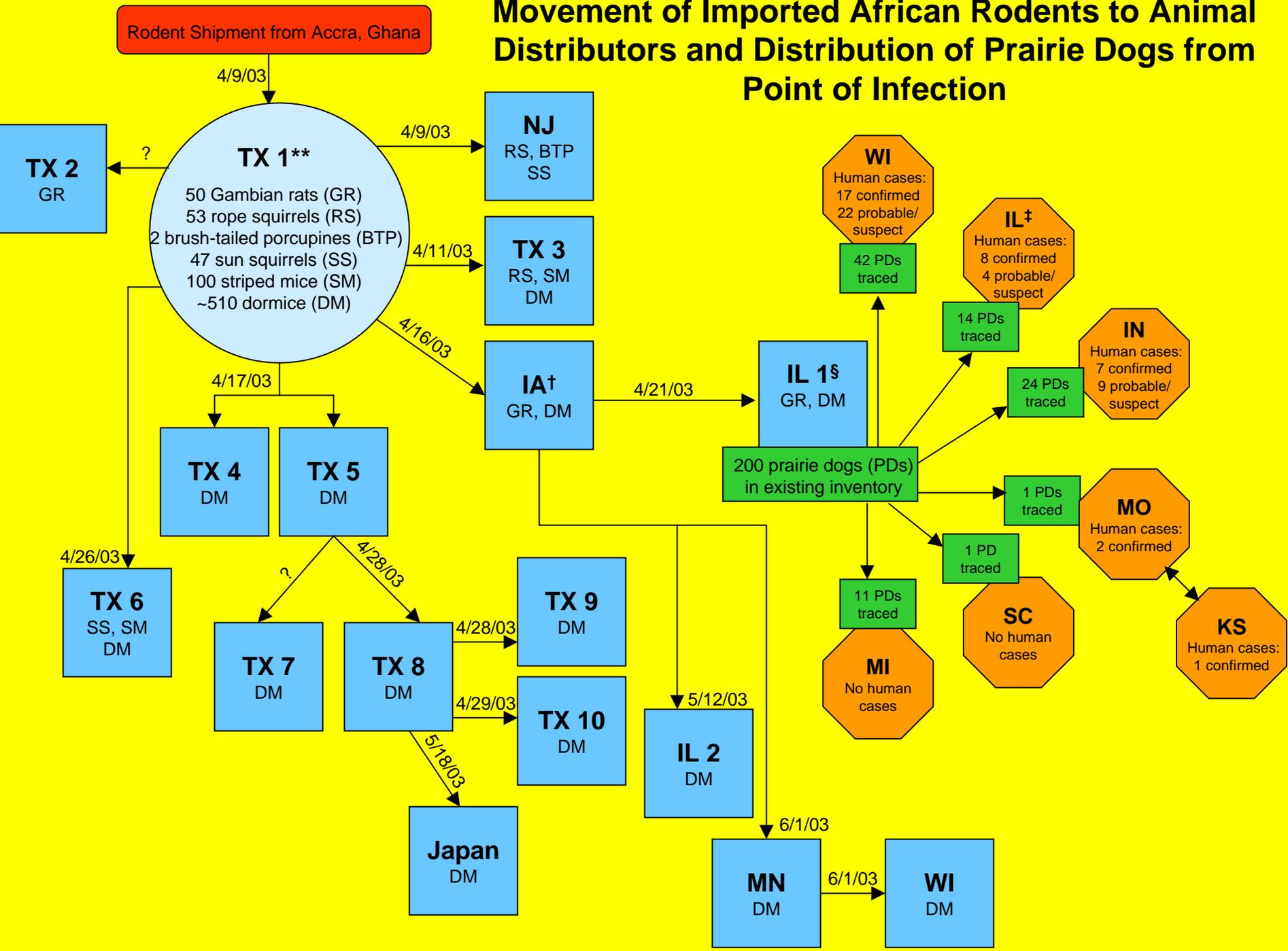
# Monkeypox-Surrogate for Smallpox(?)

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# Movement of Imported African Rodents to Animal Distributors and Distribution of Prairie Dogs from Point of Infection



**Distributor A,  
NE Illinois**  
Received and distributed exotic animals  
including African rodents and prairie dogs

**Distributor B,  
SE Wisconsin**  
39 prairie dogs received and 1 Gambian rat  
transported between April 15 and May 17

**Household  
NW Wisconsin**  
purchased 2 prairie dogs on 5/11

**Veterinary Clinic A  
SE Wisconsin**  
treated ill prairie dog on 5/13

**Pet Store A  
SE Wisconsin**  
received 2 prairie dogs on 5/5

**Pet Store B  
SE Wisconsin**  
received 10 prairie dogs on 5/5

**Household  
SE Wisconsin**  
purchased 2 prairie dogs on 5/17

**Veterinary Clinic B  
SE Wisconsin**  
treated ill prairie dog on 5/25

● Probable or suspect case  
● Laboratory-confirmed case  
C = positive viral culture  
P = positive polymerase chain reaction (PCR)  
E = positive electron microscopy (EM)  
I = positive immunohistochemistry (IHC)

**#1**  
5/16  
1

**#2**  
5/26  
C,P,E,I

**#3**  
5/31  
C,E

**#4**  
5/23  
C,P,E,I

**#5**  
5/25

**#6**  
5/24  
C,P,I

**#10**  
5/15

**#8**  
5/29  
C,P,E

**#7**  
5/30  
C,P,E,I

**#9**  
5/21

**#11**  
6/3  
C,P

# Initial Transmission of Monkeypox Virus

	Prairie Dogs	Index Cases	Distributor
11 May	PD A purchased		
13 May	PD A became ill	Pt 1 (3yof) bitten	
15 May	PD A seen by vet		
18 May			Distributor B (pt 4) bitten/scratched by PD; had sold 2 PD to index family
20 May	PD A dies; LN to Marshfield Clinic	Pt 1 seen by physician	
23 May			Distributor B develops lesion
24 May	DPH notified of gm neg rod (Later identified as <i>Acinetobacter</i> )	DPH notified Pt 1 hospitalized	
26 May		Pt 2 (mother) onset of illness	Distributor B onset fever, seen at ER
31 May			Distributor B hospitalized
2 June		Poxvirus from Pt 1 by EM at MC	Skin bx taken from Distributor B
4 June		Pt 2 poxvirus pos	Skin bx from Distributor B pos
5 June	CDC notified;		
6 June	Patient specimens to CDC; monkeypox confirmed that night		
7 June	Pt 4 isolate HA gene sequenced; identical to West African monkeypox ref strain		
9 June	Isolates from Pt 2 and PD A confirmed as monkeypox		
11 June	CDC and FDA ban importation of African rodents and sale/distribution of PD and 6 African rodent species		

# Chronology of Events (pre-CDC)

- 5/20 Northern Wisc girl, p-dog bite, first seen by physician...gram neg bacillus??...discharged 5/29
- 5/26 Girl's mother with lesions, sweats, fever, malaise
- 5/26: animal dealer with bites and rash hospitalized in Milwaukee...suspect tularemia/plague
- ~5/27-6/2: Marshfield Clinic makes poxvirus EM from hand of girl's mother, makes virus isolates from mother and p-dog...recognizes morphology not parapox (e.g., not orf virus)

# Chronology of Events

- 6/3: Marshfield emails IDPA about IHC stains for poxviruses
- 6/4: Wisconsin DOH consults CDC & Poxvirus Section: exotic pet connections heightens interest
- 6/5:
  - CDC makes offer to transport specimens
  - Wisc. DOH overnight Fed-Ex to CDC 3 suspect pt samples
  - Illinois DOH overnight Fed-Ex to CDC 1 suspect pt samples

# Chronology of Events

## June 6

- Specimens arrive CDC
- Major conference call (as testing begins)
- All specimens from all 4 pts test PCR positive
  - Orthopoxvirus generic E9L R-T PCR
  - HA & ATI standard PCR RFLP (monkeypox specific)
  - Standard E9L “multiplex” (monkeypox specific)
  - B6R R-T PCR (monkeypox specific)

# Chronology of Events

## June 7

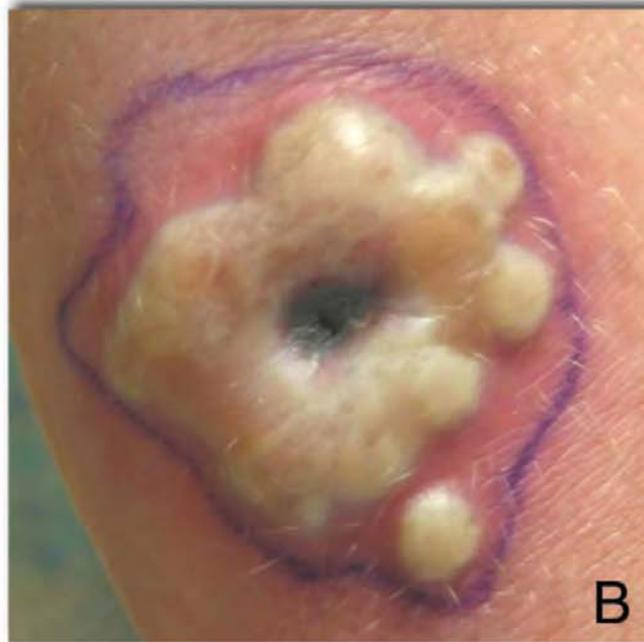
- HA gene sequenced and compared to other orthopoxvirus sequences: confirmed as belonging to one of two clades of monkeypox virus
- Health Alert Network message sent out

# Monkeypox Primary Lesions

## Primary Inoculation lesions



Pt 1, PD bite



Pt 4, PD scratch



Pt 2, PD preexisting scratch

# Monkeypox Lesions

## Dissemination lesions



# Monkeypox Lesions

## Evolution of primary lesions



# Case "1": PCR+, Culture +, seroconverts IgG, IgM +



**Case “3”: PCR+, Culture +, seroconverts  
IgM, IHC-, & EM+**

