



University of
Strathclyde

On the Trail of Tigers

Isolation and Identification of Tiger DNA in
Traditional East Asian Medicine (TEAM)

Shanan S. Tobe

Centre for Forensic Science

Department of Pure and Applied Chemistry

Tigers – *Panthera tigris*

- 8 known sub-species:

- Amur (*P. t. altaica*) - 431 to 529
- Bengal (*P. t. tigris*) - 3176 to 4556
- Indochinese (*P. t. corbetti*) - <1500
- Amoy (*P. t. amoyensis*) - none in wild for 25yrs
- Sumatran (*P. t. sumatrae*) - 400 to 500
- Bali (*P. t. balica*), Caspian (*P. t. virgata*) and Javan (*P. t. sondaica*) - all extinct.



Poaching of Tigers

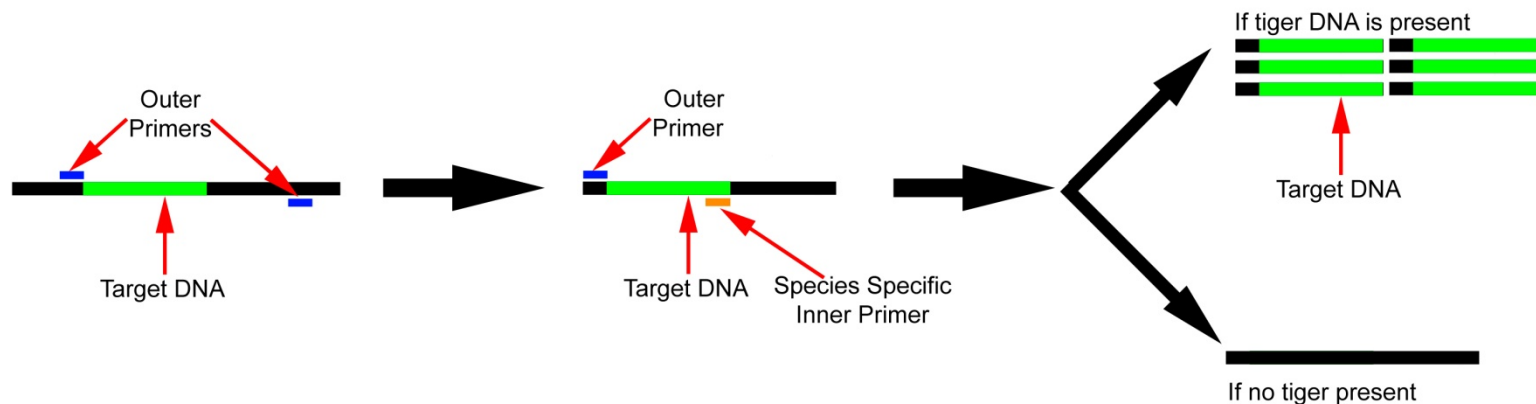
- Tiger and tiger derived products include:

- Meat
- Wine
- Pelts
- Medicine



Detecting Tiger DNA

- In TEAM expect:
 - Large amount of plant components
 - Small amount of highly fragmented tiger DNA
 - Use the mitochondrial genome
 - Use a highly sensitive test: nested PCR



Designing Primers

Leopard	ATGACCAACATTTCGAAAATCACACCCCTCATCAAAATTATTAATCACTCATTGAT	60
Lion	ATGACCAACATTTCGAAAATCACACCCCTTGTCAAAATTATTAATCACTCATTGAT	60
Tiger	ATGACCAACATTTCGAAAATCACACCCCTTATCAAAATTATTAATCACTCATTTATTGAC	60
Cat	ATGACCAACATTTCGAAAATCACACCCCTTATCAAAATTATTAATCACTCATTGATCGAT	60
Human	ATGACCCCAATACGCAAAATTAAACCCCTAATAAAATTAAATTAACCACTCATTGATCGAC	60
	* * * * *	
Leopard	GTATGTTTAAATCTACAAATTCTCACCGGCCTCTTTCTAGCCATACATTATACATCAGAC	180
Lion	GTATGTTTAAATCTACAAATTCTCACCGGCCTCTTTCTAGCCATACATTACACACCAGAC	180
Tiger	GTGTGCTTAAATCTTACAAATCCTCACTGGCCTCTTTCTAGCCATACACTACACATCAGAC	180
Cat	GTCTGCTTAAATCTTACAAATCCTCACCGGCCTCTTTCTAGCCATACACTACACATCAGAC	180
Human	GCCTGCTGATCTCTCAAAATCACACAGGACTATTCCTAGCCATACACTACTCACACAGAC	180
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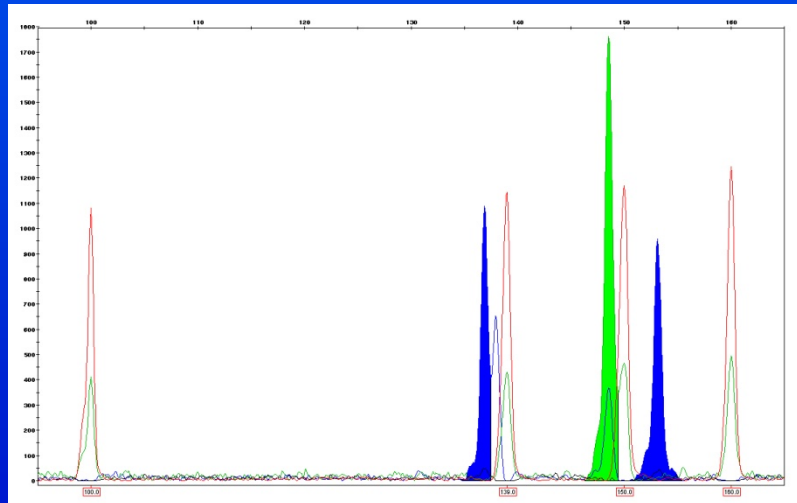
1. Cat Specific - Area of homology

2. Tiger Specific - Area of variation

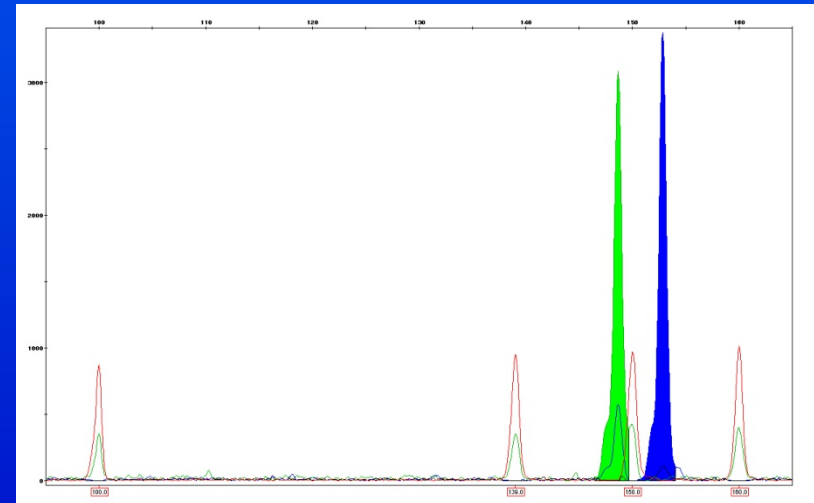
Control Samples



Tiger

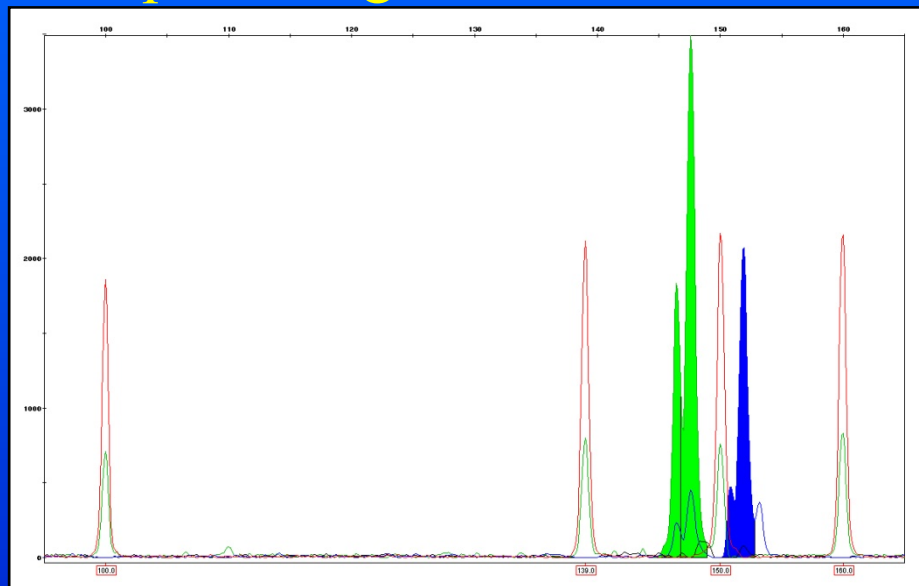


Lion

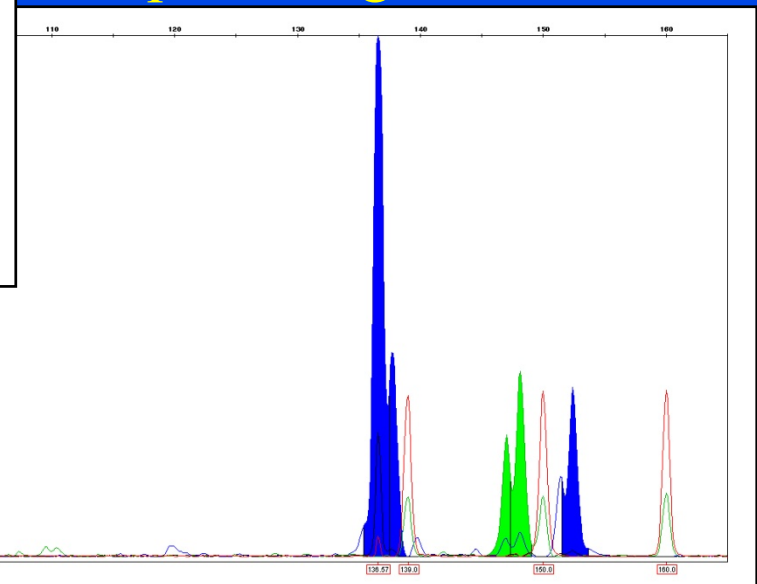


Sample Testing

Sample 1: Big Cat



Sample 3: Tiger



Estimated at fewer than
200 copies of mtDNA
= 3.40 fg (10^{-15} g)

Conclusion

- Tiger DNA was detected in one of the samples tested.
- It is illegal to export or import tiger products.
- Therefore tiger products obtained in Scotland must have been obtained from illegal activities.





THANK YOU
QUESTIONS?