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**Forensic Anthropology:  
Multidisciplinary approaches to  
complex investigations in the UK**

**Dr Julie Roberts  
Cellmark Forensic Services**

# Cellmark Forensic Services

- Established by ICI in 1987
- Specialist DNA analysis for 25 years
- One of Europe's largest paternity testers
- Expanded into general Forensic casework 2006, includes anthropology and archaeology
- 500+ UK employees
- Owned by Labcorp, one of the world's largest clinical chemistry laboratories (process of 1M tests/day in the US)



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# Aims of Presentation

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- To provide an insight into the work of the forensic anthropologist in the UK
- To demonstrate, using two case studies, how anthropology and related disciplines can contribute to a criminal investigation
- To illustrate how questions raised during casework can generate research that can assist with current and future investigations

**WARNING**

**THIS PRESENTATION CONTAINS  
IMAGES OF DECOMPOSED HUMAN  
REMAINS**

# What does the UK Forensic Anthropologist do?



Works closely with other specialists including pathologist, entomologist, odontologist, environmental scientists



## Case Study 1

# Operation Pastel: A Multidisciplinary Approach



# Operation Pastel, West Yorkshire: Background

- PCSO called to 4 Crofton road, Bradford, in response to complaints from neighbour
- Family known to social services; 8 children, alcoholic single mother (Amanda Hutton), previous domestic abuse and truancies
- PCSO refused entry, persisted and eventually gained access
- Requested assistance and search of house conducted



# Inside the House



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# Remains uncovered in cot in mothers bedroom

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# Postmortem examinations and strategies

Three examinations in total:

1. Initial examination and recommendations re' further analyses and involvement of other experts
2. Collection of samples
3. Maceration (removal of soft tissue) and final examination



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## Findings from all Disciplines

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- Entomology: Insects identified were those that favour dessicated remains, e.g. moths, carpet beetles. Little evidence of pupae cases of blow-flies etc suggesting body did not go through putrefaction stage and progressed straight to mummification
- Pathology and histology: Cause of death unascertained, severe osteoporosis and significant growth arrest due to malnutrition, deformity of cranium
- Toxicology: Nothing abnormal detected
- Anthropology: Long bones much shorter than normal for chronological age, periods of arrested growth, some delay in skeletal development, deformity of cranium – postmortem deformation or underlying pathology?
- Odontology: Normal dental development
- Isotope and trace element analysis: Nutritionally deficient over long period of time, malnourished and osteoporotic

# Anthropology Findings 1: Long bone length and development

Method	Mean Age	Range
Dental Development	4.7 yrs	4.5 to 4.9 years
Skeletal Development (radiographic assessment)	4.5 yrs	3 to 6 years (excluding distal radius)
	3.5 yrs	1 to 6 years (including distal radius)
Skeletal Development (examination of macerated bone)	3.5 yrs	1 (or <1) to 6 years
Long Bone Length (x-ray)	1.5 yrs	1 to 2 years (excluding clavicle)
Long Bone Length (actual: first post-mortem examination)	1 year	6 months to 1.5 years
Long Bone Length (actual: following maceration)	1.25 yrs	1 to 1.5 years

## Anthropology Findings 2: Harris Lines – Periods of Arrested Growth

Bone	Harris Line Count Mortuary (JR)	Harris Line Count Lab (JR)	Harris Line Count Lab (NMG)
Left radius, distal end (left wrist)	7	7	Minimum of 7
Left tibia, distal end (left ankle)	3	7 or 8	0 (limited visibility)
Right tibia, proximal end (lower part right knee)	7	7	Minimum of 3
Left tibia, proximal end (lower part left knee)	5	5	Minimum of 4
Right tibia distal end (right ankle)	Not counted	5	0 (limited visibility)





## Outcome

Convicted of Manslaughter and sentenced to 15 years in prison

“MOTHER WHO ALLOWED HER FOUR-YEAR-OLD SON TO STARVE TO DEATH AND LEFT HIS DECOMPOSING BODY IN A COT FOR NEARLY TWO YEARS HAS BEEN JAILED FOR 15 YEARS”

<http://www.bbc.co.uk/news/uk-england-24401112>

“Alcoholic jailed for 15 years for killing tragic Hamzah and leaving his body to rot in 'breathtakingly awful' squalor”

<http://www.dailymail.co.uk/news/article-2443626>



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