From the Mouths of Manx Mothers: The Histological results from an assessment of maternal health AD500 - 1500

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Culture VANNIN

Keele University

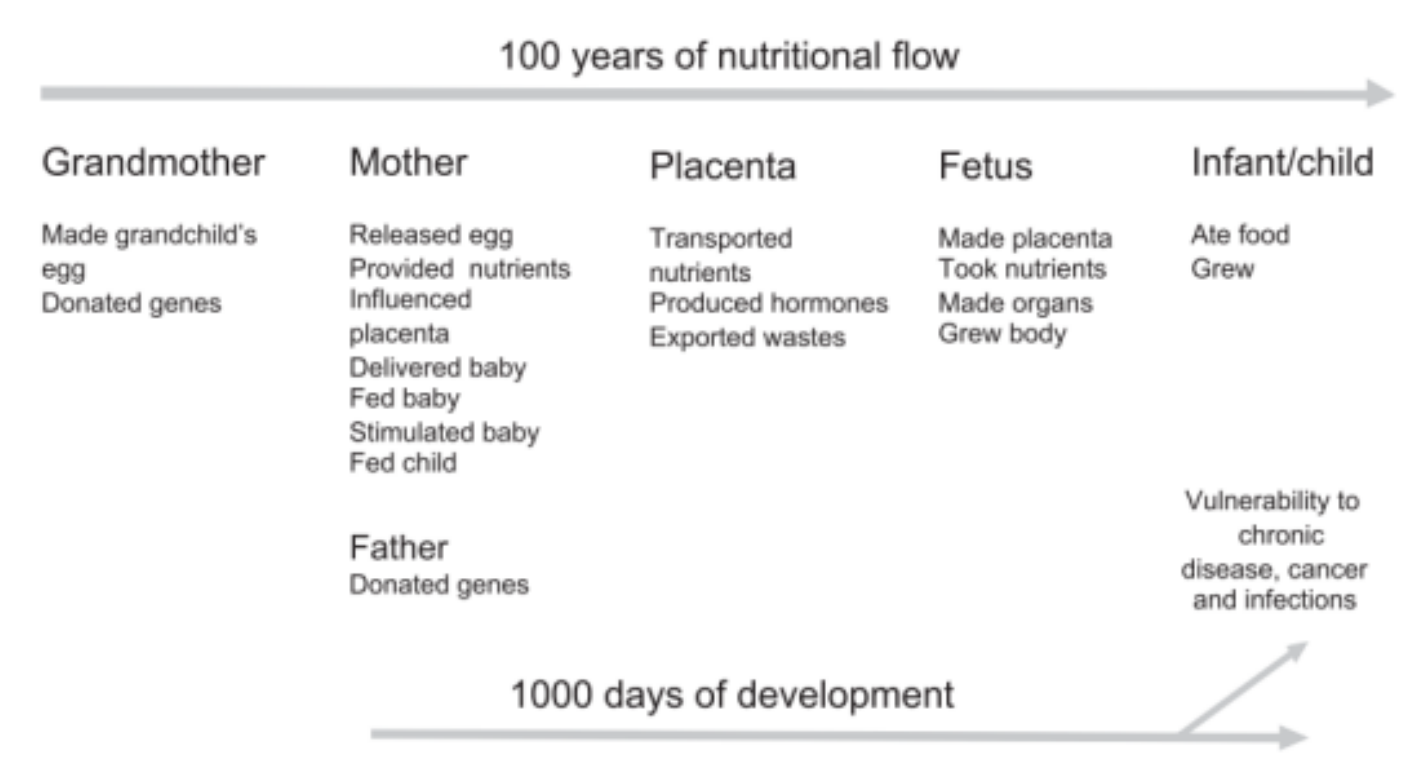
Dr Marie C. Weale, Dr Chris Aris, Cora Cisan, Catherine Roberts, Sarah Kerruish, Allison Fox

This presentation contains images of human skeletal remains and discusses potentially triggering content of maternal and infant health.

If at any point, you feel uncomfortable, you are welcome to leave.

Maternal-Infant Dyad

- Maternal health during pregnancy is known to have long-term effects on the health of the child throughout their life; this relationship is termed the maternal-infant dyad.
- Maternal health is the foundation of every population
- During development, embryos, foetuses, and young infants are influenced by adverse phenomena that can permanently change the function and structure of the body.



Barker 2012, p187

Life Course Theory

‘’Humanity is shaped by the biological outcomes of cultural strategies which require a multi-disciplinary approach to untangle the biology and culture in past populations (Schutkowski 2003).’’

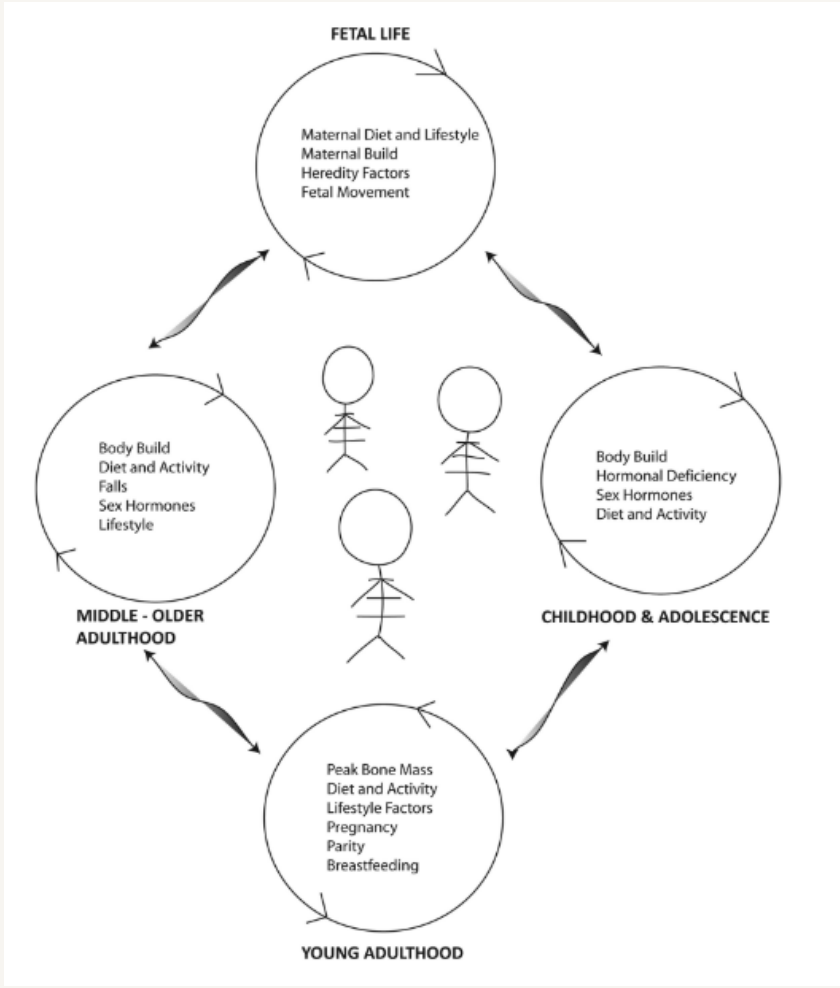
The life course approach in bioarchaeology identifies and recognises that an individual’s transition through life and this dynamic environment depends on sex, age, and social status.

Life Course Approach in Bioarchaeology

- Identifying and recognising that individuals transition through life and this dynamic environment.

- Transition through life is culturally constructed and influenced by the constraints of society and community that the individual was a part of during their life

(Ben-Shlomo and Kuh 2002; Agarwal 2016)



A model of plasticity in the development and maintenance of the skeleton during life and the variables that can influence in (Agarwal 2016, page 141).

How can we study maternal health in the past?

- Human skeletal remains

Growth and a range of diseases, including nutritional and hereditary conditions

- Teeth

Form during childhood, so can be used to study specific periods of childhood even when someone is an adult

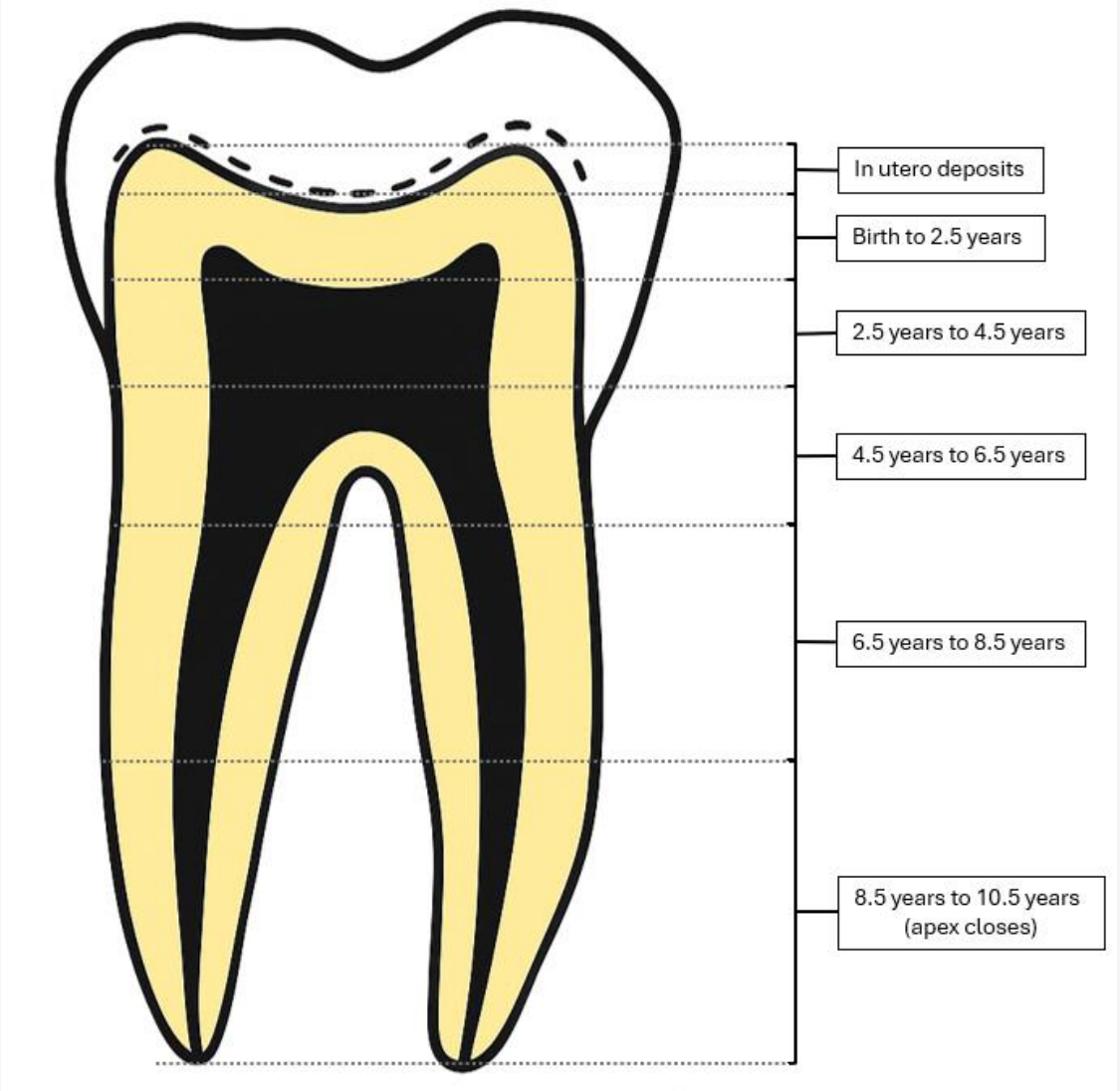
Understanding Tooth Formation

Formation of Teeth

- Appositional growth forming concentric rings.
- Circadian rhythm of growth with daily secretions of dentine.
- Teeth form throughout childhood and do not remodel like bone.

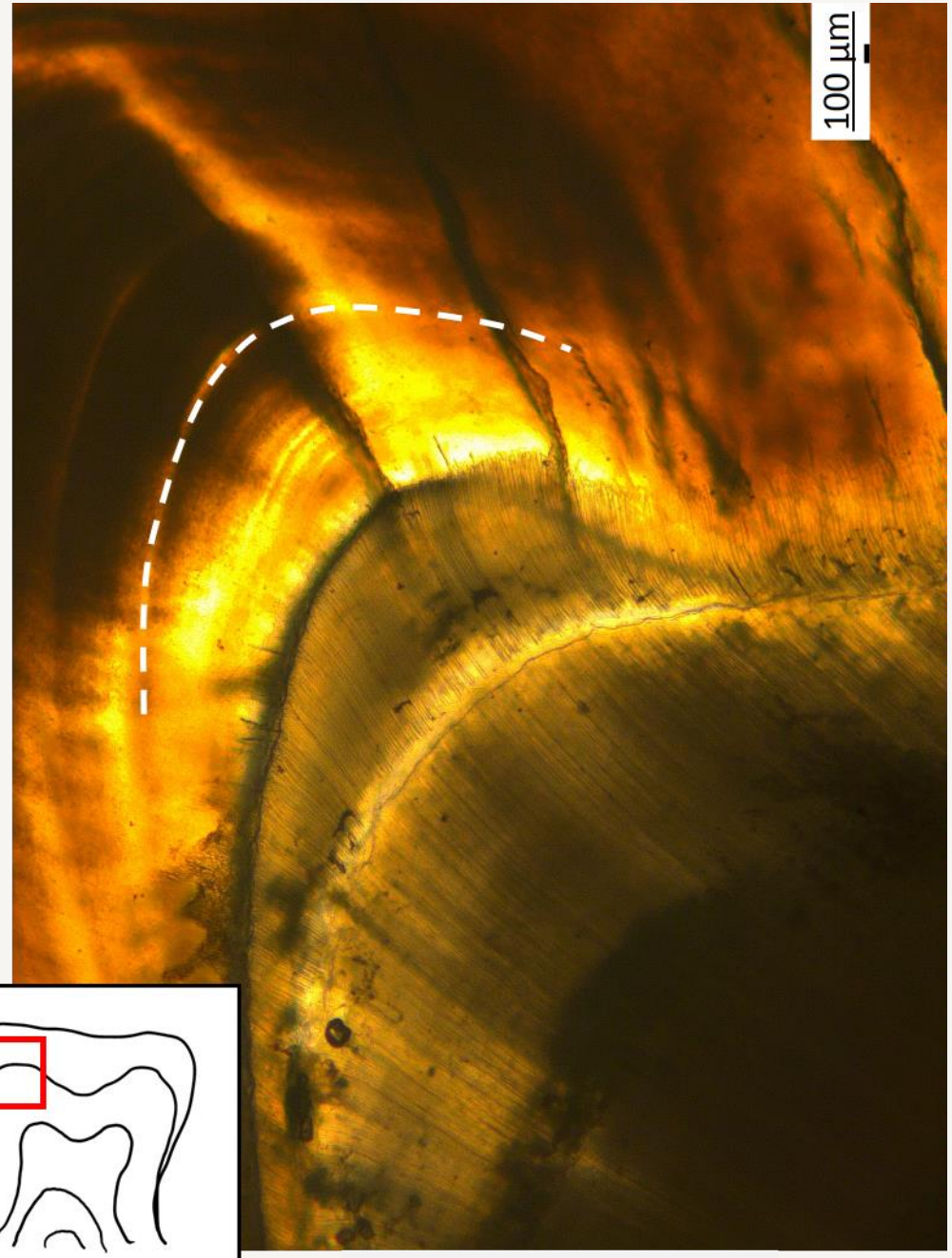
First permanent molars

- Start to form around 30 weeks *in utero* and complete around 10 years of age



Teeth and Vitamin D

- Teeth begin to form at the dental enamel junction, with both tissues forming through appositional growth.
- Individuals with a healthy vitamin D pathway have a homogeneous dentine matrix.
- Disruption to that pathway results in the formation of interglobular dentine (IGD).
- The neonatal line shows parts of the structure that formed in-utero.



Samples



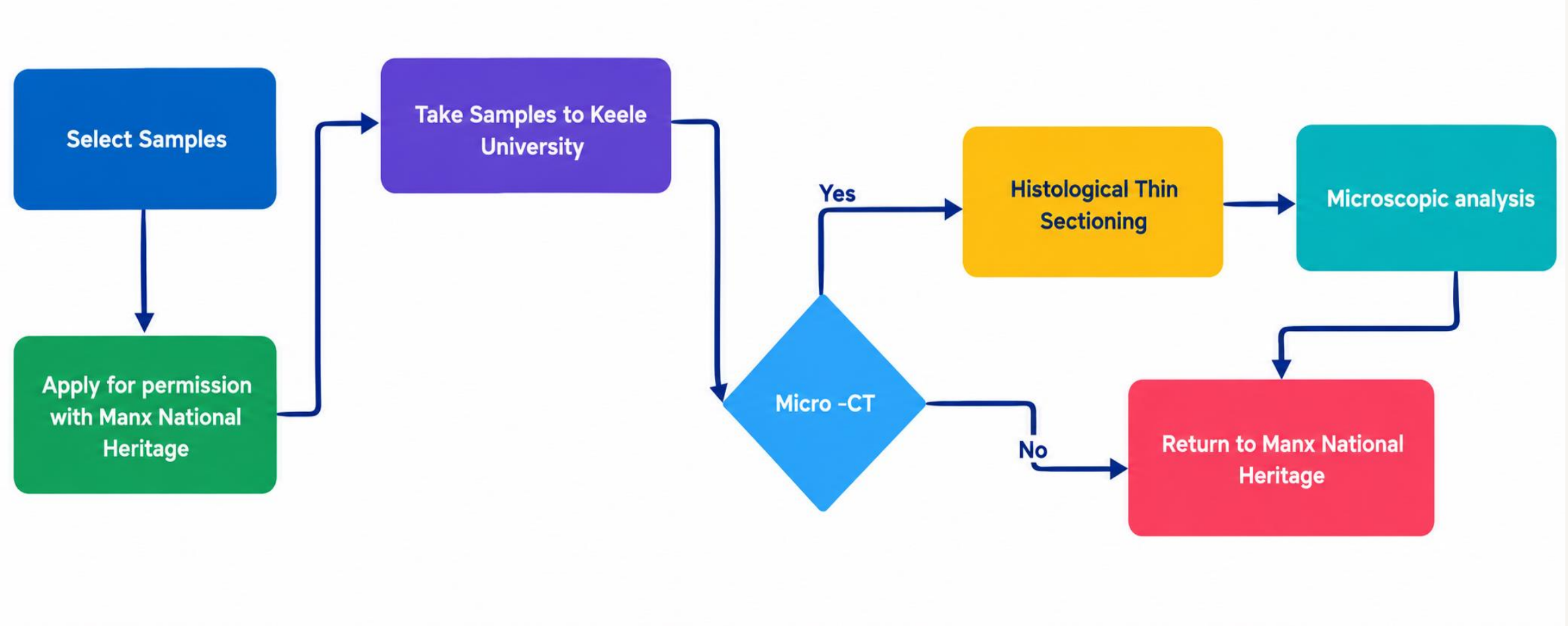
Peel Castle (Early medieval)
Tooth samples = 1

Cronk Keeilane (Early medieval)
Tooth samples = 2
Skeletal Samples = 2

Balladoole (Early medieval)
Tooth samples = 2
Skeletal samples = 2

Rushen Abbey (Early – Mid medieval)
Tooth samples = 6
Skeletal Samples = 2

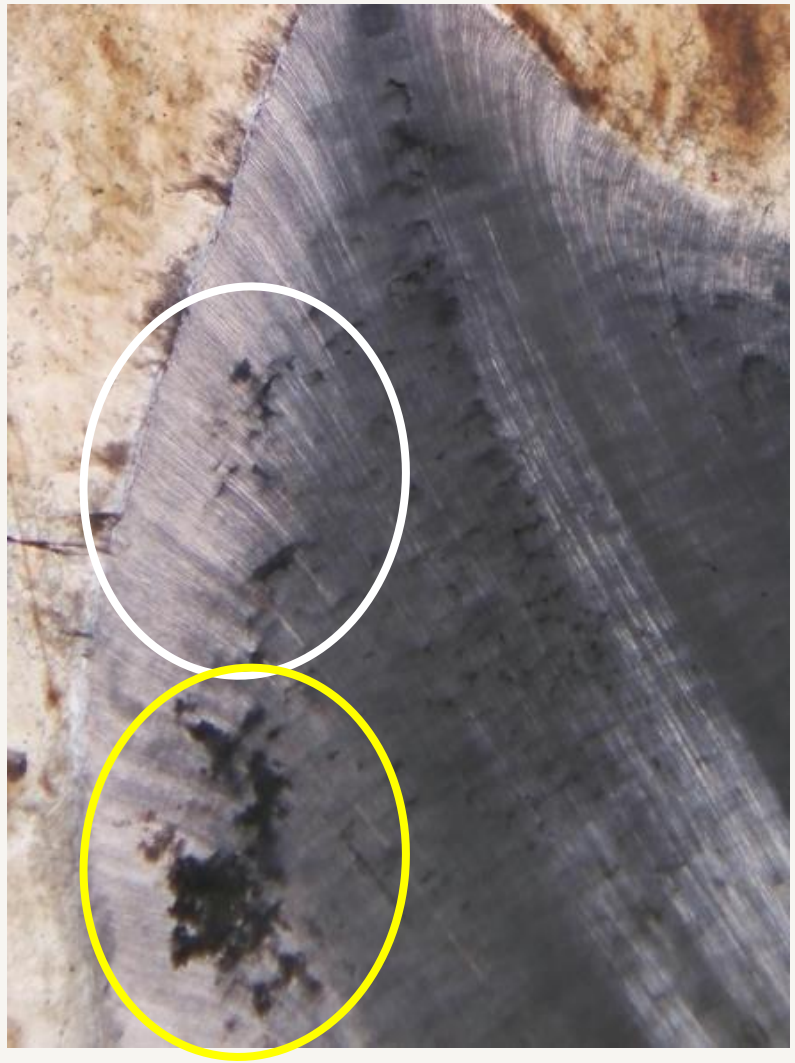
Dental Histology Process



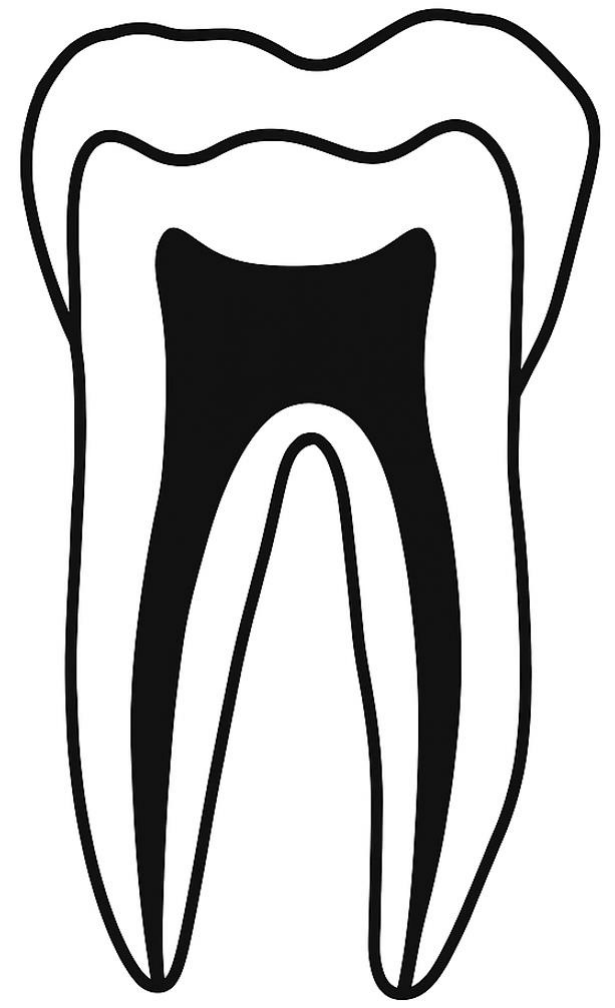
Dental Thin Sections







Diagenesis





- Physical/chemical changes to the dental tissues that occurred in the burial environment or after excavation.
- Diagenesis has a branching patter, with a fibre-like structure that can cover all structures. IGD has a bubble formation.
- If found in the same regions of the tooth, it can complicate identification of IGD.

Results from Rushen Abbey

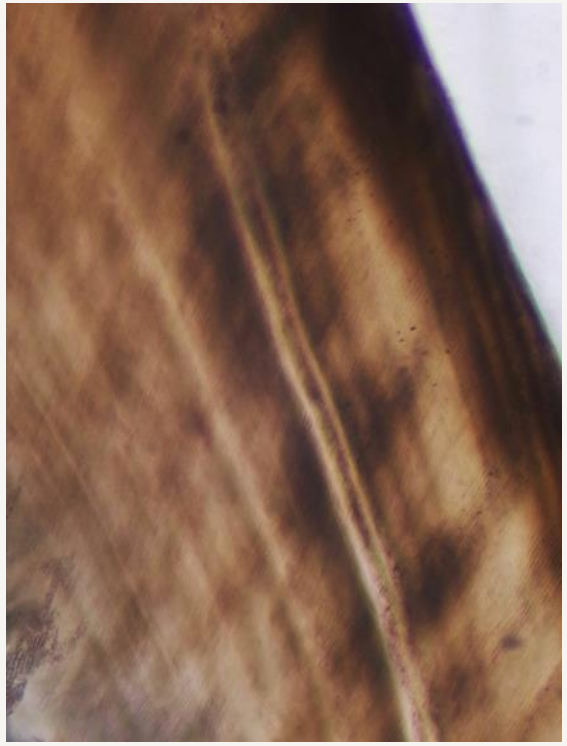
- RA2614, between 3 – 4 years at time of death.
- Sampled the deciduous 1st molar, which begins forming *in utero* and finishes around 3.5 years.
- Episode of deficiency occurred between 1.5 – 2.5 years.
- Neonatal line is present and there was no evidence of deficiency during gestation.

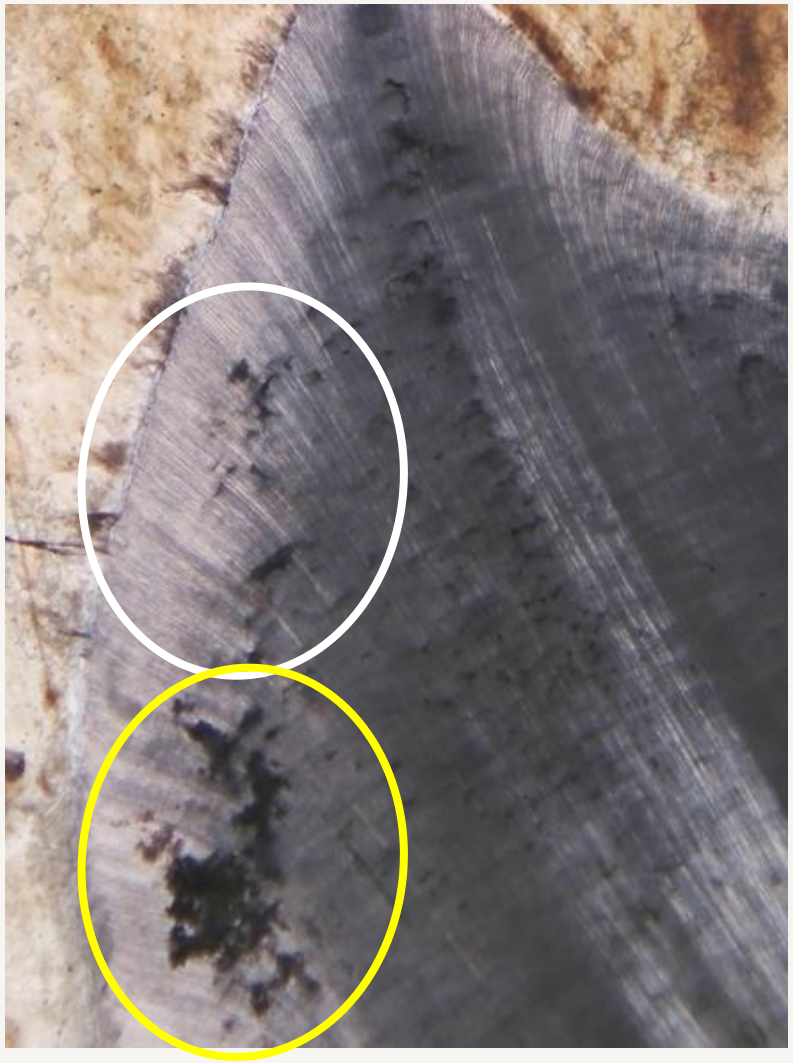


Results from Rushen Abbey

- RA2230, between 6 – 8 years at time of death.
- Sampled permanent molar, showing evidence of deficiency from around birth through to at least 2.5 years.
- Linear enamel hypoplasia evidence on other teeth and sampled tooth.

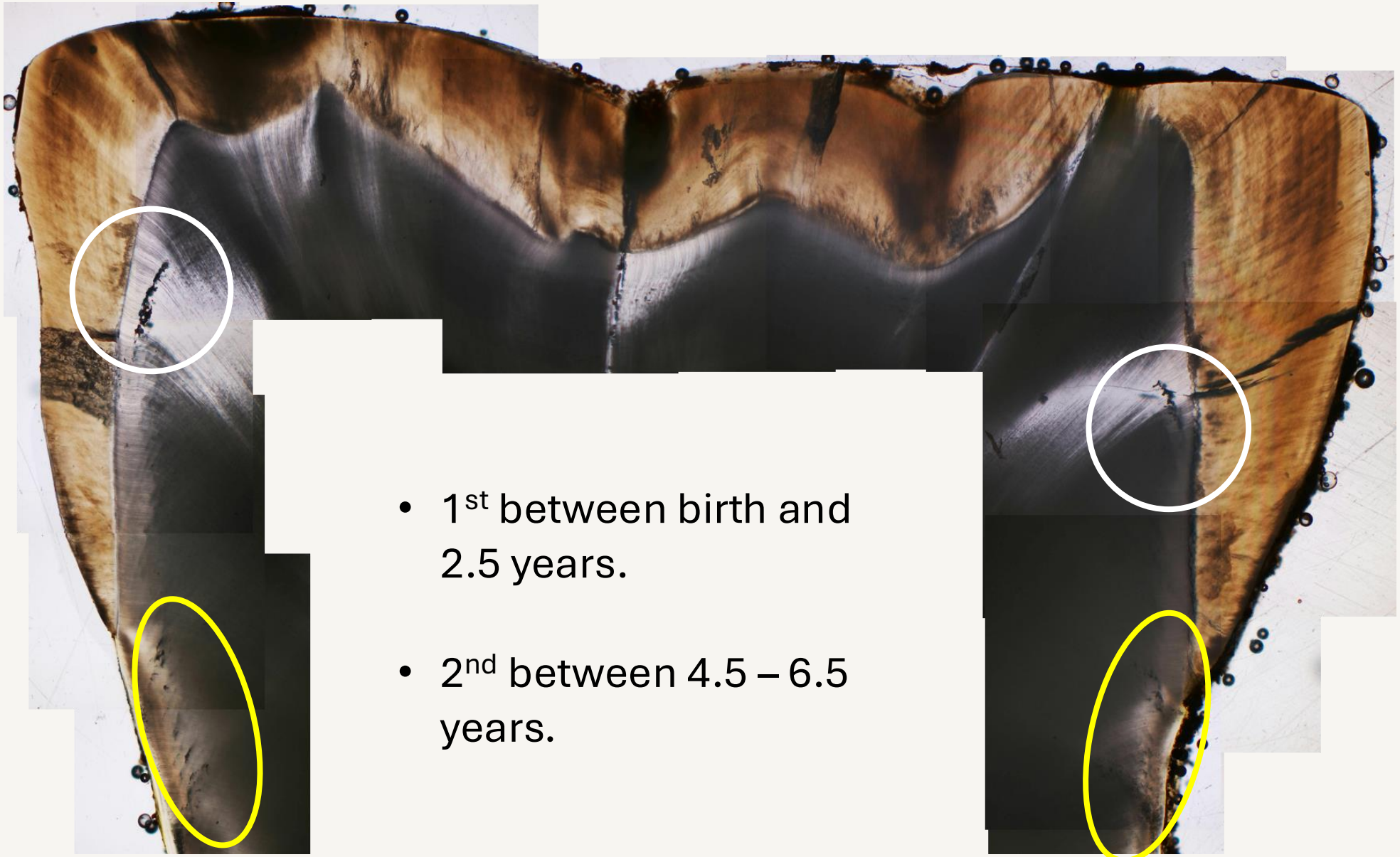






Results from Balladoole

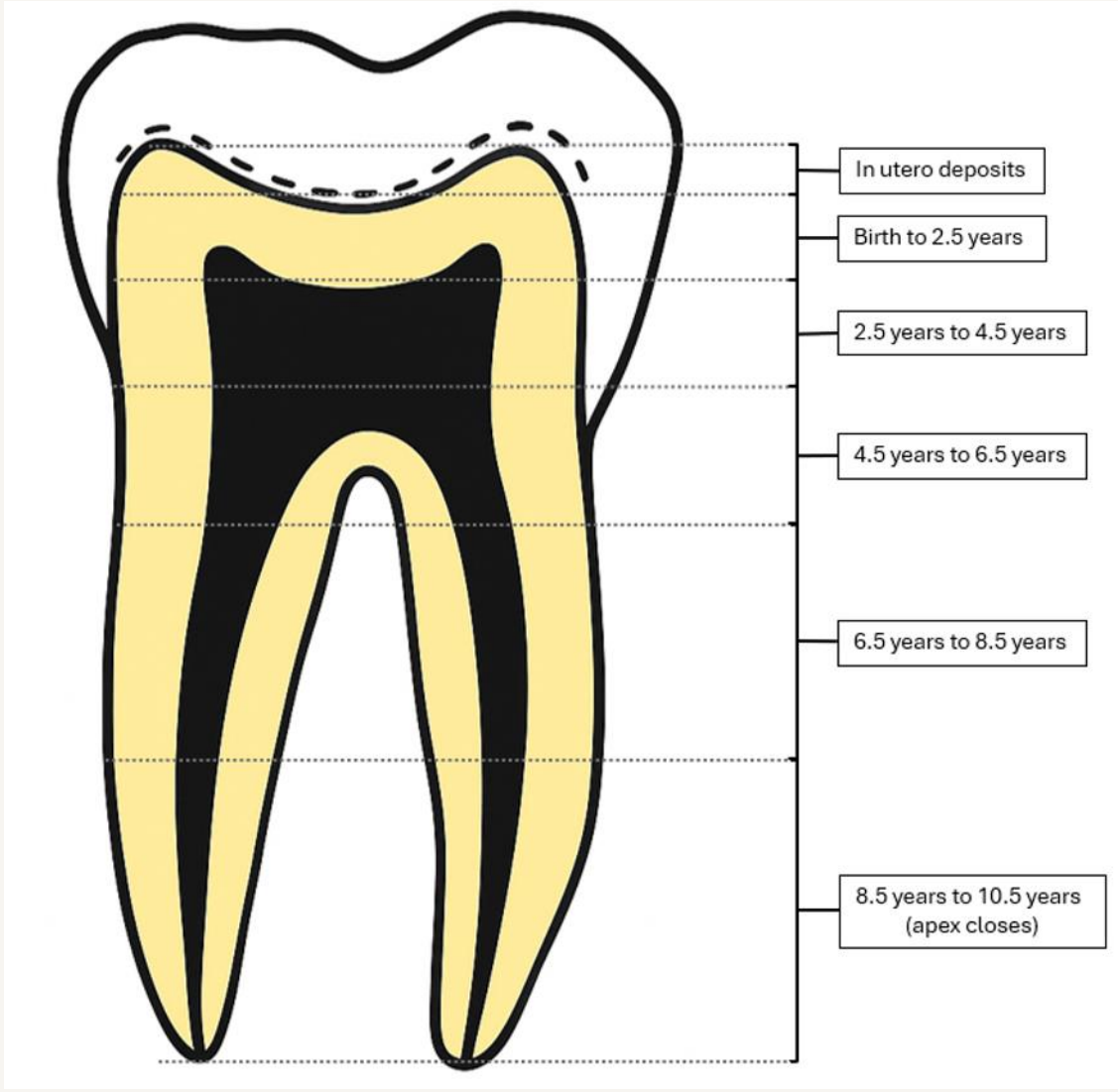
- BD993, between 16 – 19 at death.
- Remodelled fracture to their right lower ulna.
- Two episodes of deficiency



- 1st between birth and 2.5 years.
- 2nd between 4.5 – 6.5 years.

Next Steps

- Identify biological sex using the enamel peptides.
- Look for evidence of childhood stress and evidence of weaning using incremental isotopes.
- Form biological profiles of these individuals using different methods.
- Look at it within the settings of each population.



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Thank you
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Questions?

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