B72 Determination of the Distribution of DNA to the Faces of Children Aged 0-5 Years Due to Normal Day-to-Day Interaction Between the Child and the Carers

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After attending this presentation, attendees will learn that it is possible to obtain DNA from the skin surface of a child which can be amplified and identified and that this varies from child to child as well as at different ages. The attendee will also learn how DNA can vary in distribution across the face and neck of a child.

This presentation will impact the forensic community and/or humanity by demonstrating how upon completion of phase I and phase II of this research, a series of facial maps will be produced illustrating the distribution of DNA upon the faces of children aged 0-5 years. As childcare

varies as the child ages these maps can be used as a template for determining how much or little DNA is transferred as the level of care changes. Variation in cases of abuse can then be investigated further with a view to determining exactly who is responsible.

The goal of this presentation is to provide information on the normal distribution of DNA present on a child's face and neck for those aged 0-5 years due to the normal day-to-day interaction between the carers and the child.

Hypothesis: That it is possible to retrieve DNA from the face of a physically abused child in order to determine the perpetrator of the abuse. However, to date no one knows what the normal distribution of self and non-self DNA upon the face of children is due to the daily activities of the child for example from carer child interaction or child-child interaction. This is the first study of its type to investigate the normal deposition of DNA on the faces of children aged 0-5 years.

In Britain every year three million children are victims of abuse. Many are too young or too frightened to indicate who is responsible. Victims of physical abuse are generally under the age of 5 years with the highest mortality rates being observed in those under 3 years old. Without witnesses to the event it may be impossible to identify the perpetrator and therefore prosecute them. A method of identifying the individual responsible for physically abusing the child is critically required.

It is hypothesised that when an individual hits a child some of the offenders DNA will be transferred onto the child's skin. However, before this can be confirmed one needs to know what is the normal distribution of DNA on a child. To date no information is available. The aim of this study is to provide that information for children aged 0-5 years. In order to do this the study examines the presence of DNA other than that of the child on the face, its distribution and its source. It considers in the presence of nonchild DNA whether this has arisen from the normal day to day interaction between the carer and the child. By studying children aged 0-5 years and considering the care of children and how the interaction between the carer and the child alters at each milestone it is possible to provide facial maps of the normal distribution of DNA found on the faces of children. This can then be considered if DNA is retrieved in the investigation of abuse in whether the DNA present is outside that of the normal handling pattern of the child at that age group.

For the purpose of the study a facial map was designed which divided the face and neck into 12 sections. Sterile, moist swabs were used to swab each area of the face using a number of techniques. The techniques for the swabbing of children aged 0-5 years were developed such that the children could tolerate the process and yet it avoided contamination by the person undertaking the sampling. All swabs were anonymised, frozen and transported to a non-police laboratory for independent analysis. DNA was extracted from the swabs using Chelex and was quantified using Oligreen® ssDNA Quantitation kit (Molecular Probes, OR, USA). DNA was amplified and analysed using AmpF*l*STR® SGM Plus® PCR Amplification kit, ABI PRISM® 377 DNA Sequencer, Genescan® and Genotyper® (Applied Biosystems, CA, USA).

Results from phase I and phase II of a three phase study considered the facial distribution of 80 children. Each facial area showed an average quantity of DNA from the swabs less than 100ng, making accurate quantification difficult. Partial genetic profiles were obtained from the majority of the areas of the face, which were consistent with arising from the child. Extraneous alleles were observed in some areas, particularly the neck and cheeks. These partial profiles had not arisen from the child or from the person undertaking the sampling process. The results show that it is possible to obtain identifiable genetics profiles from the face using simple swabbing techniques designed within the study protocol. Facial maps for each age are being produced to show the distribution of the observed profiles.

DNA Transfer, Children, Facial Mapping

 ** Presenting Author*