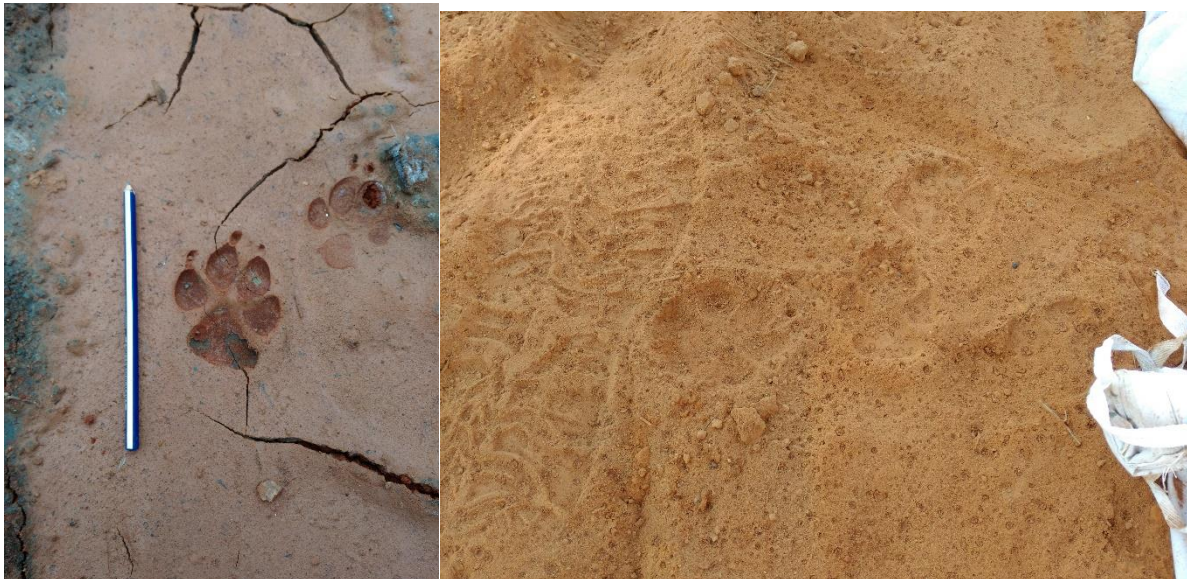


## ACTIVITY 2 Identifying Fingerprints

### Background

(Link this to Aboriginal people using animal prints in the soil to identify the animal)



Erayinia\_Chris\_Rosagio\_Mining\_Site\_Ngadju\_Aboriginal\_Family

### Contemporary Science uses fingerprints for identification:

Since the late nineteenth century, fingerprint identification methods have been used by police agencies around the world to identify suspected criminals as well as the victims of crime. The basis of the traditional fingerprinting technique is simple: the skin on the surface of the hands and feet forms ridges, so-called papillary ridges, in patterns that are unique to each individual and which do not change over time. Even identical twins do not have identical fingerprints.

Before computers manual fingerprint classification systems were used to categorize fingerprints based on general ridge formations. One of the most popular classifications is the Henry Classification System, where there are three basic fingerprint patterns: loop, whorl and arch (Figure 1) which constitute 60–65%, 30–35% and 5% of all fingerprints

respectively. There are also other more complex classification systems that break down patterns even further.



Figure 1: Fingerprint patterns.

Arch

Loop

Whorl

Fingerprints are typically formed from the aqueous-based secretions of the eccrine glands of the fingers and palms. The resulting latent fingerprints consist usually of a substantial proportion of water with small traces of amino acids and chlorides mixed with a fatty, sebaceous component which contains a number of fatty acids and triglycerides. Iodine fuming is the oldest known method of developing latent fingerprints. The iodine vapours react with the organic molecules such as amino acids present in the sweaty fingerprint left behind on the surface of the paper. Iodine forms a brown-colored charge-transfer complex with organic residues in the fingerprint. The image formed by the iodine method is not permanent and should be photographed as soon as the print is legible.

### **Did you know that?**

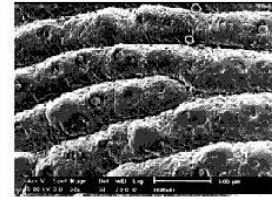
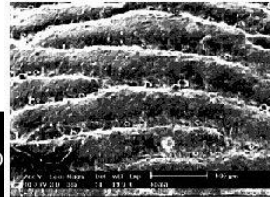
The fingerprints of koalas are virtually indistinguishable from those of humans.



*Koala*



*Human*



The fingerprints of koala bears are virtually indistinguishable from those of humans, so much so that they can be easily confused at a crime scene.

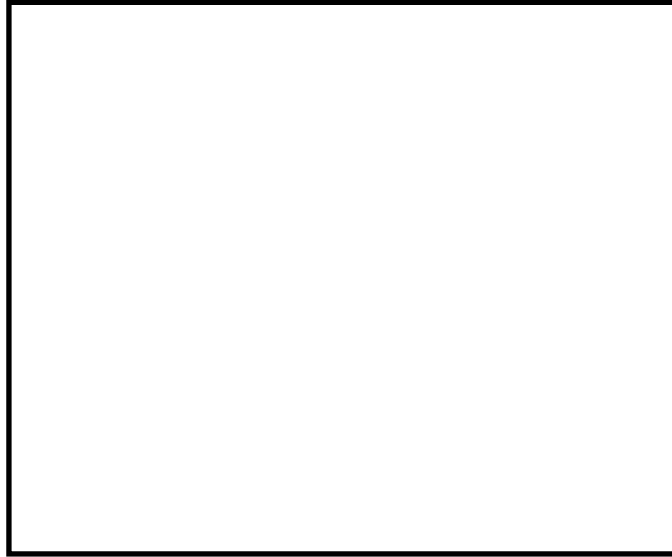


## Instructions and Safety Notes

For best results, try to make your thumb more ‘sweaty’ by rubbing it along your neck, temple or hairline. Then place your thumb firmly on the piece of paper supplied (do not move it around) to make a fingerprint. Now place the piece of paper into the iodine developing jar (CAUTION – AVOID BREATHING IN IODINE FUMES, MAKE SURE YOU CLOSE THE JAR AS SOON AS POSSIBLE). Wait a few minutes for the fingerprint to develop and then take it out of the jar and examine your fingerprint in more detail using a magnifying glass.

## Observations

Using a magnifying glass, look at your fingerprint, make a sketch of it and then try to classify your fingerprint using the Henry Classification System, as show on the previous page:



## Conclusion

Which pattern does your fingerprint belong to? \_\_\_\_\_

