Fingered out: Gene that causes people to be born without fingerprints discovered
By Rachel Rickard Straus
Last updated at 2:26 PM on 19th September 2011

Notorious 1930s gangster John Dillinger was willing to suffer excruciating pain to burn his fingerprints off with acid so they could not be used to link him to crime scenes.

But for most of us, having no fingerprints would be a nightmare, causing problems at border control and when proving our identity.

At last scientists have identified the gene behind the rare condition that leaves some people without fingerprints.

Sufferers of a rare condition called adermatoglyphia are born without fingerprints.

Called adermatoglyphia or Immigration Delay Disease, the condition means sufferers are born without any grooves or patterns on the pads of their fingers.

New findings by Professor Eli Sprecher of Tel Aviv University's Sackler Faculty of Medicine and the Tel Aviv Sourasky Medical Center show that a genetic mutation is responsible for this unusual condition.

The condition first came to the attention of the medical community when a Swiss woman tried to cross the border into the United States, which requires non-citizens to be fingerprinted upon entry. Border control personnel were mystified when the woman told them she could not comply because she did not have fingerprints.

She and nine members of her family who also have no fingerprints underwent a genetic analysis.

Making their mark: Scientists at Tel Aviv University (pictured) compared genes of those with the condition to those without

Scientists at Tel Aviv University compared the genes of those with the condition to those without, to identify where the genetic alteration lies.

They discovered a skin-specific version of the gene SMARCAD1 influences fingerprint development.

The people without fingerprints were found to have lower levels of the gene related to skin development.

Scientists will now be able to further investigate how the gene
regulates fingerprint development.
Like DNA, fingerprints are unique to each person or set of identical twins and that makes them a valuable identification tool for everything from crime detection to international travel. They are used for identification because they are fully formed 24 weeks after fertilization and do not change throughout our lives.
Only four documented families are known to suffer from the disease worldwide.
It isn’t only fingertips that have patterned skin, says professor Sprecher. Palms, toes and the soles of the feet also feature these ridges, called dermatoglyphs.
However, he adds: 'the factors underlying the formation and pattern of fingerprints during embryonic development are largely unknown'.
In addition to an absence of fingerprints, the condition also leads to a reduction in the number of sweat glands. Abnormal fingerprints can also be a warning sign of more severe disorders.
The findings have been published in the American Journal of Human Genetics.
In 2009, a Chinese woman managed to enter Japan illegally by having plastic surgery to alter her fingerprints.
Tokyo police said Lin Rong, who had previously been deported from Japan for overstaying her visa, had paid $15,000 (£9,000) to have the surgery in China.
Police believe the practice of biometric fraud may be widespread, with Chinese brokers taking huge sums to modify fingerprints surgically.
The surgery involved removing skin patches from the thumb and index fingers and regrafting them on to the matching digits of the opposite hand.

http://www.dailymail.co.uk/sciencetech/article-2039079/Gene-causes-people-born-fingerprints-discovered.html#ixzz1b15Dzknh