



# Analyzing Paternal Lineage: Y-STR

Y-STR Patrilineage DNA Profiling

Scenarios for Use

Autosomal vs. Y-STR Analysis

DNA Paternity & Immigration Services

Accreditation

## Male Biological Relationship Testing

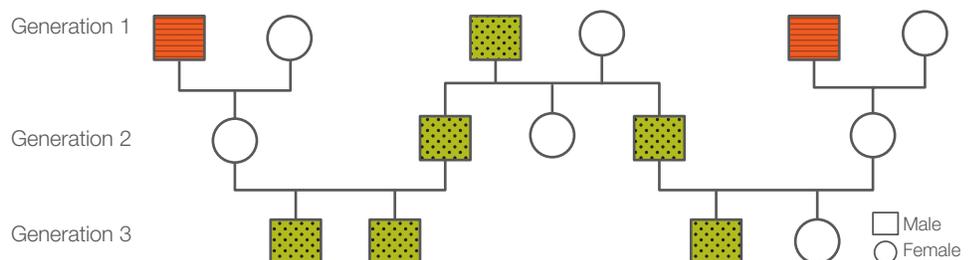
Maxxam's DNA testing services and techniques are highly regarded and fully accepted in both the scientific and legal communities. For over a decade, Maxxam has been the largest private Canadian laboratory offering DNA testing for paternity, immigration and other matters of biological relatedness.

### Y-STR Patrilineage DNA Profiling

Short Tandem Repeat (STR) locations on the Y chromosome (called Y-STRs) can be analyzed in both forensic and biological relationship testing. Since the Y chromosome is only passed on by the father at conception and remains relatively unchanged from generation to generation, Y-STR testing can determine if two or more male individuals are related through their paternal line. All of the individuals in a paternal lineage (i.e. grandfather, father, brother) will share the same Y-STR profile. Individuals not related along the paternal line would have different Y-STR profiles.

### Scenarios for Use

This type of test can be used to establish biological relationships. If Y-STR's are tested between two male siblings, you can establish if they could share the same father. Y-STR tests can also be used if the father is not available for testing. If the father is deceased and his brother is available he can be used to establish a biological relationship. If a male child and his paternal uncle are tested, their Y-STR profiles will match. If they do not, then the uncle is excluded from the paternal line for that child.



*In the diagram above, all males in the paternal lineage (dotted boxes) share the same Y-STR profile. The males in striped boxes do not have male offspring so the paternal lineage is broken.*

# Paternity and Relatedness Testing



## Autosomal vs. Y-STR Analysis

Autosomal STR analysis is still considered the gold standard for DNA testing as it has much greater discrimination power; however, there may be other types of cases where autosomal STR's may not be as informative as a Y-STR result. Situations where Y-STR analysis can be useful include:

1. When there are several generations or relational gaps between male individuals (i.e. distant cousins or ancient DNA testing).
2. When an individual is missing or unable to provide a comparison sample and another living male paternal relative is available to provide a DNA sample. Much like autosomal STR analysis, Y-STR analysis can be used to exclude an individual from a paternal lineage in addition to being able to add statistical weight to an individual being from a paternal lineage.

## DNA Paternity & Immigration Services

Maxxam was the first accredited DNA laboratory approved by Citizenship & Immigration Canada (CIC) for family class sponsorships. Maxxam also holds all tendered Government contracts for DNA testing within Canada. We offer legally documented DNA testing and convenient “non-legal” self-collection Curiosity DNA testing, with a standard turnaround time for results of 3 to 5 business days.

## Accreditation

As a consumer, it is important to know that the DNA results you receive are reliable. Since DNA testing services are not regulated in Canada, the only way for a laboratory to demonstrate that they have quality measures in place, and staff with the necessary education and training requirements, is to be accredited by organizations such as the Standards Council of Canada (SCC). Maxxam set precedent by becoming the first private DNA testing laboratory in Canada to obtain accreditation by the SCC.



More information can be found at [www.scc.ca](http://www.scc.ca).

*SCC Accreditation & Design Mark is an Official Mark of the Standards Council of Canada, used under license.*

Maxxam is the Canadian market leader in analytical services and solutions to the energy, environmental, food and DNA industries and a member of the Bureau Veritas Group of companies – a world leader in testing, inspection and certification services. We support critical decisions made by our customers through the application of rigorous science and the knowledge and expertise of our over 2500 employees.

335 Laird Road, Unit 2  
Guelph ON N1G 4P7  
Tel: 519 836 2400 ext. 712  
Toll-free: **1 877 706 7678**  
Email: [info@thednalab.com](mailto:info@thednalab.com)