

Difference Between Minisatellite and Microsatellite

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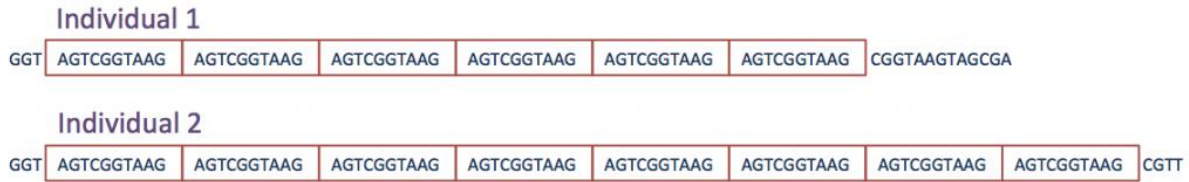
Key Difference - Minisatellite vs Microsatellite

Repetitive DNA is the nucleotide sequences repeating over and over again in the genome of organisms. Repetitive DNA accounts for a significant fraction of genomic DNA, and there are three main types named tandem repeats, terminal repeats and interspersed repeats. Tandem repeats are the highly repeated sequences which lie adjacent to each other without interruption. There are three major types of tandem repeats in the vertebrate genome. They are satellite DNA, microsatellite DNA and minisatellite DNA. **Minisatellite is a section of highly repeated DNA that consists of a series of a repeating sequence composed of 10 to 100 basepairs. Microsatellite is a section of repetitive DNA that consists of short repeating sequences composed of 1 to 9 base pairs.** Therefore, the key difference between minisatellite and microsatellite is the size or the length of the repeating sequence.

What is a Minisatellite?

Minisatellite DNA is a section of DNA which comprises a series of short DNA repeating sequence which is 10 to 60 base pair length. Minisatellites are also referred as **variable number tandem repeats (VNTR)**. Minisatellites are often with confused with microsatellites. However, minisatellites and microsatellites are now distinguished based on the size of the repeating sequence by scientists.

Minisatellites can be seen in more than 1000 locations in the human genome. These short sequences are rich with G and C. The number of repeats in a given minisatellite widely varies among the individuals.



- Type of Minisatellite because
 - The repeat sequence is 10-100 nucleotides
 - The sequence repeats 5-50 times
- Number of repeats differs between two different individuals, but the repeating sequence does not

First human minisatellite was identified by A. R. Wyman and R. White in 1980. Later, Alec Jeffreys discovered the extreme polymorphism of copy number of minisatellites among organisms. Those discoveries made minisatellites as ideal markers for DNA fingerprinting, linkage analysis and population studies. Minisatellites also contribute to regulation of [gene expression](#), [transcription](#), alternative splicing, etc.

What is a Microsatellite?

Microsatellite is a section of DNA which has simple sequence repeats of 1 to 10 base pair long. Microsatellites are also called **short sequence repeats (SSR)** or **simple tandem repeats (STR)**. There are two types of microsatellites named simple microsatellites and composite microsatellites. Simple microsatellites consist of only one type of repeat sequences. Composite microsatellites consist of more than one type of repeats. Microsatellites most commonly possess poly A/T regions. Microsatellites are [codominant](#) and abundant in [eukaryotic genomes](#).

Similar to minisatellites, microsatellites also show polymorphism among individuals. The number of repeats for a given microsatellite varies among the individuals. Therefore, microsatellites can also be used as genetic markers in DNA fingerprinting. Microsatellite polymorphism can be easily identified by [PCR](#) and [gel electrophoresis](#). Flanking region of microsatellite is highly conserved in related species.

What are the similarities between Minisatellite and Microsatellite?

- Minisatellites and microsatellites are non coding DNA sequences.
- Both are tandem repeats.

- Both consist of highly repeating sequences.
- Both can be used as powerful genetic markers for DNA fingerprinting.

What is the difference between Minisatellite and Microsatellite?

Minisatellite vs Microsatellite	
Minisatellites are tandem repeats with a monomer repeat length of 10 to 100 base pairs.	Microsatellites are short tandem repeats that consist of 1 to 9 base pairs monomer repeating sequences.
Size of the Repeating Sequence	
Minisatellite has repeating sequences of 10 to 100 base pairs.	Microsatellite has short sequences of 1 to 9 base pairs.
Common Bases	
Minisatellites are rich with G and C bases.	Microsatellites are rich with A and T bases.
Other Names	
Minisatellites are also known as variable number tandem repeats.	Microsatellites are also known as short sequence repeats (SSR) or simple tandem repeats (STR).

Summary - Minisatellite vs Microsatellite

Minisatellite and microsatellite are two types of tandem repeats. They are distinguished based on the number of bases in the repeating sequence or the size of the sequence. Minisatellite has 10 to 100 base pair length repeating sequence while microsatellite has 1 to 9 base pair length repeating sequence. This is the main difference between minisatellite and microsatellite. The copy number of repeating sequence in minisatellites and microsatellites vary widely among individuals. Both minisatellites and microsatellites are powerful DNA markers for analyzing genetic variation within and between populations of species.

References:

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