Johan Albert Levan Biography

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Biography

Johan Albert Levan was born on March 8, 1905. Levan headed the Institute of Genetics at the University of Lund in Sweden. In 1956, Levan and **Joe-Hin Tijo** were the first to discover that human cells contain the **diploid** number of 46 chromosomes. Prior to Levan and Tijo's findings, scientists had erroneously believed that human cells contained 48 chromosomes. At that time, scientists lacked techniques to accurately observe overlapping chromosomes within a **cell** and this inability led to the erroneous misconception that human somatic cells contained 48 chromosomes.

The technique for observing chromosomes came about by accident when in 1951 a technician caused white blood cells to swell with water by mistakenly placing them in a hypotonic solution. The overlapping chromosomes within the swollen white blood cells were able to untangle and spread out. In 1953, Levan and Tijo pioneered this technique by preparing white blood cells for analysis, placing them between a glass slide and cover slip to be viewed under a microscope.

Levan and Tijo's discovery came about in 1956 when they were studying cells by placing them in a hypotonic solution consisting of dilute salts that enabled the cells to swell. In addition to the dilute salt solution, Levan and Tijo added colchicines, a drug that stops cellular division and allows the extraction of **DNA replication** at various stages.

Once Levan and Tijo established the correct number of human chromosomes, scientists were able to determine diseases caused by **chromosome** abnormalities. Within three years, French geneticist Jerome Lejeune discovered that patients with **Down syndrome** (trisomy 21) had an extra chromosome 21.