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A Timeline of Down Syndrome

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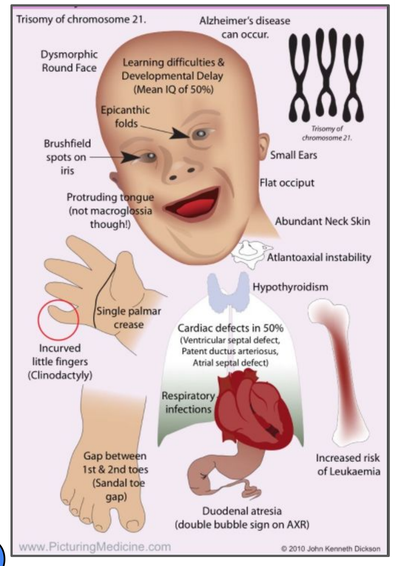
1770-1870

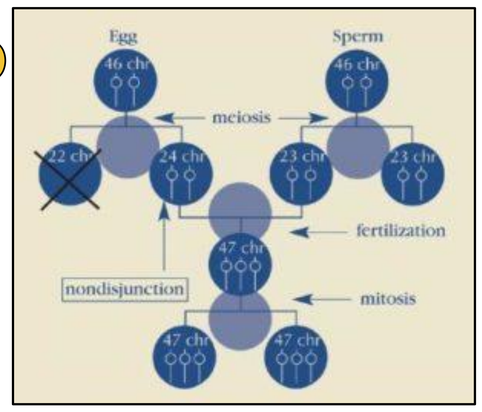
1773: Eastern State Hospital in Williamsburg, VA is the first institution for the mentally ill in The United States

1866: John Langdon Down – English Physician and advocate for patients with intellectual disabilities. Used the term "Mongoloid" to describe phenotype, which varies in severity and in penetrance, with no predilection to any population.



1871-1913

1883: Americans embrace "Eugenics," coined by Sir Francis Galton, which advocated for selective mating, "breeding out" those with disease, disabilities, and "undesirable" traits.



1914-1929

1929:
Life Expectancy is only 9 years old

1930-1939

1933: Study discovers a link between the age of the mother and the occurrence of DS.[5]

Maternal Age	Incidence of Down Syndrome
20	1 in 2,000
30	1 in 900
40	1 in 100
49	1 in 10

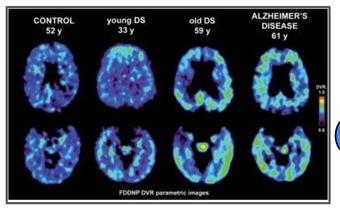
(11)

1932: Nondisjunction, a novel chromosomal disorder, first suggested cause of Down Syndrome (DS).[4]

1940-1952

1946:
Life Expectancy is 12 years old.
Benjamin Spock suggests that babies with DS should be institutionalized.

1948: First publication about association between Alzheimer's Disease (AD) and DS.[6]



1953-1965

1959: Dr. Jerome Lejeune discovered Trisomy 21 (T21). Causes 95% of DS cases across the US. Risk increases with maternal age. This genetic variation has no environmental influences.

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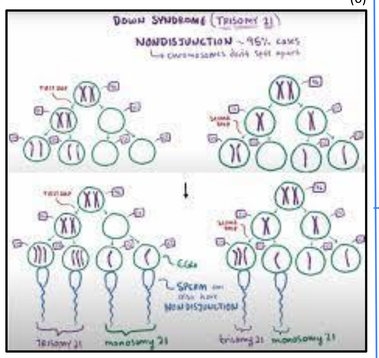
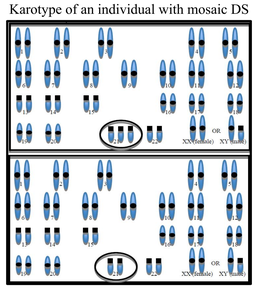


1961: John F. Kennedy established National Institute of Child Health and Human Development to conduct and support research on intellectual disabilities.

1960: Translocation, a second genetic variation of DS, was discovered. This has the only form of inheritance with a risk of 3 in 1000 non-karyotyped births.[8]

1961: Mosaicism, a third genetic variation, was discovered. Individuals may not display all common phenotypic traits in DS.(8)

Karotype of an individual with mosaic DS



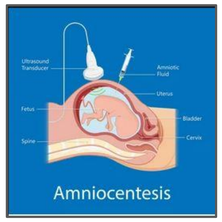
Have an extra chromosome 21 in some cells.

Some cells are normal with two copies of chromosome 21.

1965: World Health Organization accepts "Down Syndrome" as the standard term.

1966-1978

1968: DS is first detected with amniocentesis, a study to diagnose fetal abnormalities.



1970s: Public schools were required provide a free and appropriate education to children with DS.

1976: Abortions increased at 3rd trimester after parents were informed of DS diagnosis.

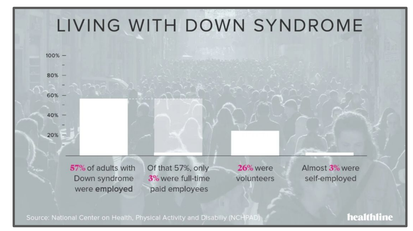
1979-1989

1979:
Life Expectancy increased to 25 years.

1981:
DS Preventative Medical Checklist," edited by William I. Cohen, presents the first U.S. medical management suggestions for doctors.

1990-2003

1990: George H. W. Bush signs The Americans with Disabilities Act.



1995: Link between miscarriages and chromosomal abnormalities. Discovered that 32% of DS pregnancies miscarried before 16 weeks, and a total of 54% were lost by term.[9]

1997:
Life Expectancy increased to 47 years.

2004-2006

2004: Down Syndrome linked to gene dosage, due to duplication of part/all of chromosome, increasing dosage of any single gene.[7]

2007-2010

2010: Rosa's Law, signed by Barack Obama, removes words such as "retardation" from legislation.

2011-Now

Today:
Life Expectancy increased to 60 years.
Early intervention and specialized therapies, help improve a child with DS motor and cognitive development. There is still potential to improve with clinical care and health care disparities.

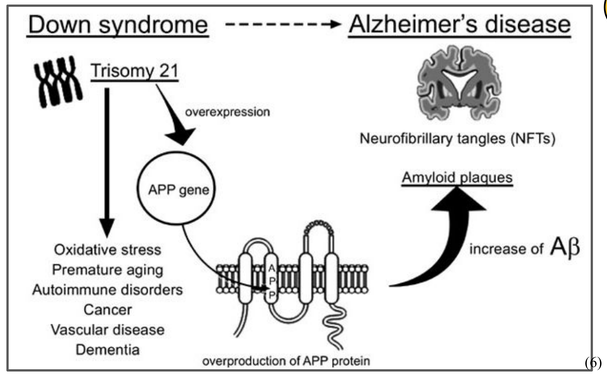
Dr. Thessa Hilgenkamp, at UNLV, is conducting a NIH-funded research to better understand the cause of fatigue and exercise intolerance for individuals with DS.

Prenatal screening for DS poses ethical concerns. Lowest DS population in Iceland with an increase in elective abortions. Countries without elective abortions have higher rates of DS.

2012: Global Down Syndrome Foundation and National Down Syndrome Congress published a patient education pamphlet for prenatal testing.

2017: T21 linked to an overdose of mRNA and proteins, dysregulating cellular functions.[3]

2019: AD study connecting over production of APP gene on T21.[10]



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