Williams-Beuren Syndrome

Brady I. Magaoay
Professor Douglas Brutlag
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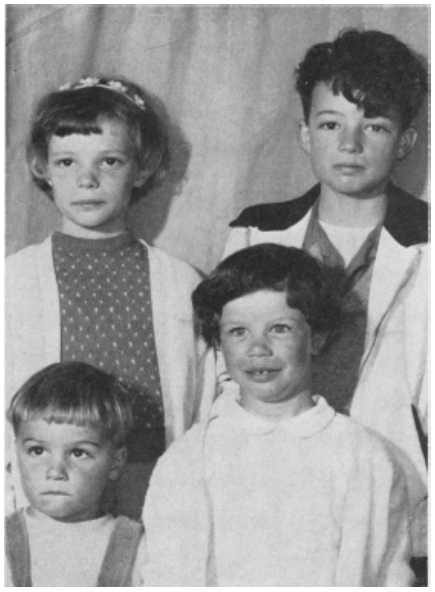
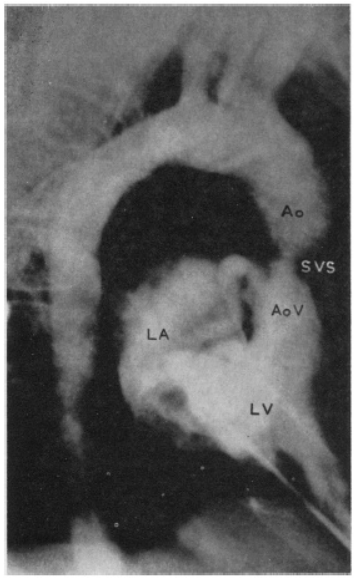
Discovery of Williams Syndrome

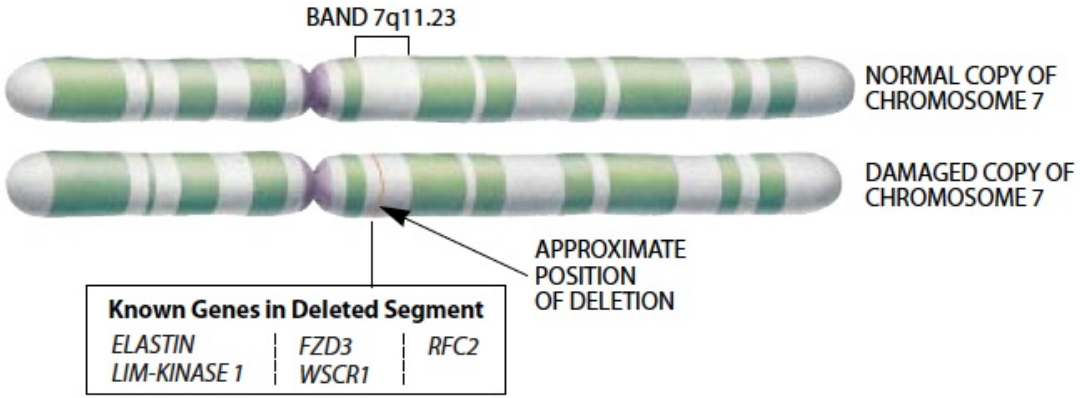
- 1961 Dr. J. C. Williams treats four patients with distinct symptoms and features
- 1962 Dr. A. J. Beuren reports similar findings in three patients
- 1993 Dr. C. A. Morris discovers the genetic cause for the disease





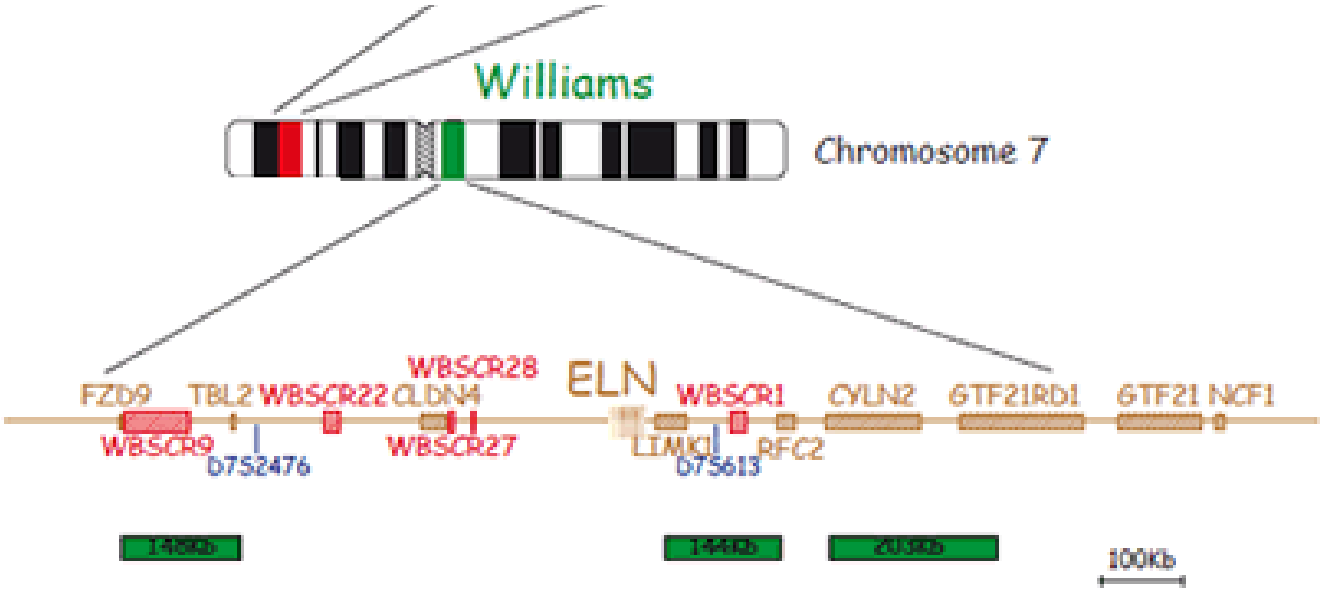
Inheritance and Penetrance

- Autosomal dominant
- *De novo* contiguous deletion within the WBSCR
- Hemizygosity for the *ELN* gene
- 100% Penetrance
- 50% chance that a parent with Williams Syndrome will pass the mutated chromosome to their child
- Occurs in 1:7,500 births in Norway and 1:20,000 births in the U.S.



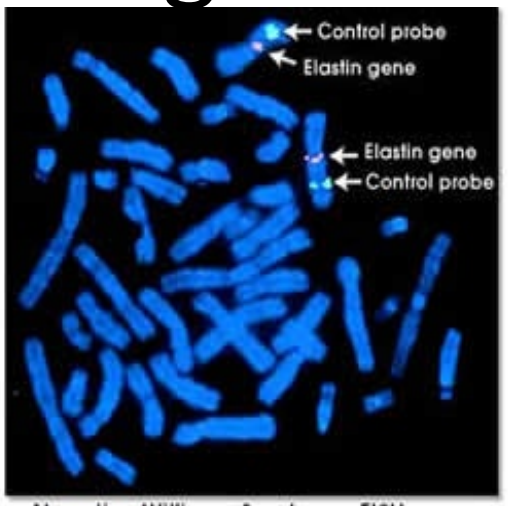
Cytogenetics of Williams Syndrome

- The WBSCR deletion is due unequal crossing over between chromosome7 homologs
- WBSCR is flanked by low copy repeats
- *ELN* gene intron contains large repetitive elements

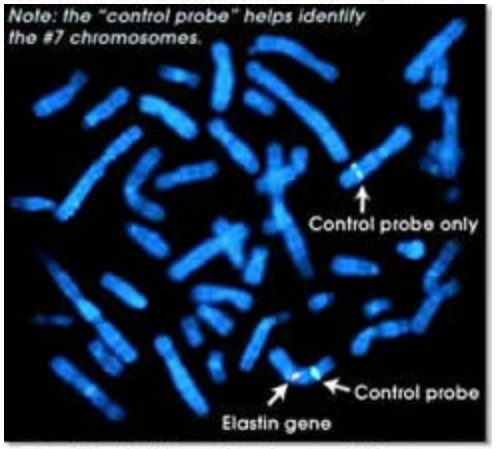


Diagnostic Testing

- Clinical diagnosis based on the contiguous gene deletion for the WBSCR encompassing the elastin gene *ELN*
- Fluorescent in situ hybridization (FISH)
- Targeted mutation analysis



Negative Williams Syndrome FISH assay
(*Chromosome 7*)
The elastin gene is found on both chromosomes.
This individual does not have Williams Syndrome.



Positive Williams Syndrome FISH assay
(*Chromosome 7*)
The elastin gene is found on only one chromosome.
The other copy carries an elastin gene deletion.

Clinical Descriptions

- Phenotypes can range
- Mental Retardation
- Predisposed to cardiovascular diseases
  - 75% exhibit SVAS
- Endocrine complications
- Difficulty with visuospatial construction

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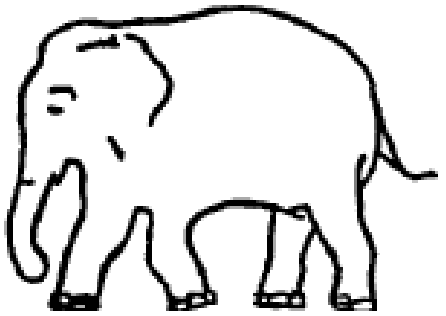
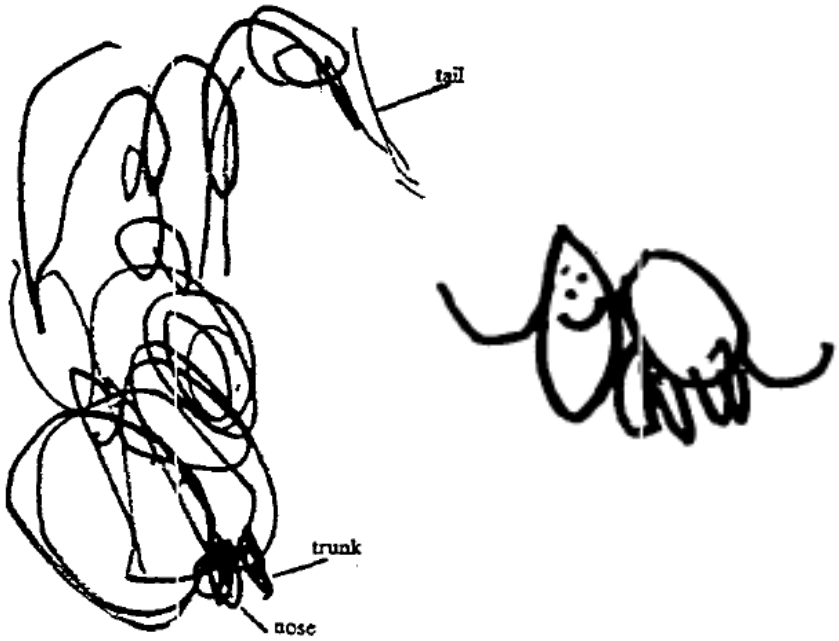




Behavior and Speech

- They have the "cocktail party manner"
  - Social exuberance
  - Overly friendly
- Anxiety issues
- Attention deficit disorder (ADD)
- Mastery of the spoken language
  - Expressive language
- Link: http://www.youtube.com/watch?v=_qAxdWSgq

Inspiration for “Wee Folk” of Legends

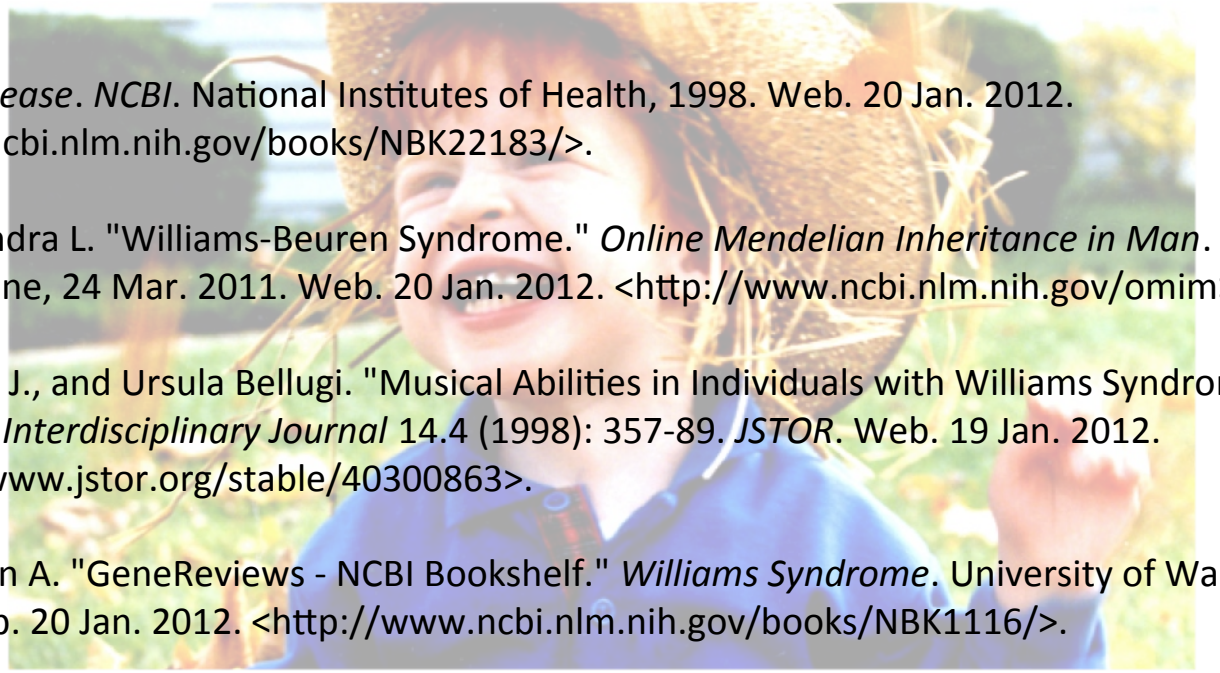
- Williams Syndrome may have inspired the creation fairies, elves, leprechauns, and other “wee folk” of fairy tales.
- “Elfin-like” facial features
- Affinity for music
- Great storytellers

Treatment

- No cure
- Special education programs, counseling
- Psychotropic medication
- Several treatments for hypercalcemia
- 30% individuals require cardiothoracic surgery
- Constantly monitor their health

Interval/Age	Test/Measurement
Annual	•Medical evaluation • Vision screening to monitor for refractive errors and strabismus •Monitoring of blood pressure in both arms •Measurement of calcium/creatine ratio in a random spot urine and urinalysis
Every 2 years	•Serum concentration of calcium
Every 3 years	•Thyroid function and TSH level
Every 5 years	•Audiologic examination
Every 10 years	•Renal and bladder ultrasound examination
In adults	•Oral glucose tolerance test (OGTT) starting at age 30 years to evaluate for diabetes mellitus 1 •Evaluation for mitral valve prolapse, aortic insufficiency, and arterial stenoses •Evaluation for cataracts

Works Cited



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