



## Extended Ashkenazi Genetic Disease Screen (Bloom, Fanconi Anemia, Gaucher, Mucopolidosis IV, Niemann Pick A) ©2005

**Ashkenazi Ancestry:** Having relatives from Eastern or Central Europe who practiced the Jewish faith, regardless of an individual's current religion or residence.

**Sephardic Ancestry:** Having relatives from Mediterranean areas (Greece, Spain, etc.) who practiced the Jewish faith, regardless of an individual's current religion or residence.

**Autosomal Recessive (AR):** A genetic condition due to inheritance of a defective gene from two carrier parents. The chance of an affected child is 1 in 4 or 25% for each pregnancy.

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**Bloom syndrome** is caused by a gene defect that results in an increased number of chromosomal breaks. Affected persons generally have short stature, skin color changes and rashes especially after sunlight exposure, susceptibility to infections and cancer, and possible mental retardation. Fertility problems are common in both sexes. There is no cure, so treatment is mainly preventative.

**Fanconi anemia, type C** is caused by a gene defect that results in an increased number of chromosomal breaks. This leads to a decreased production of blood cells, skeletal abnormalities, and an increased risk of cancer. Onset is usually in childhood, with survival into the late teens or early twenties. Microcephaly and mental retardation may be present, along with gastrointestinal or cardiac abnormalities. In rare cases, adults are diagnosed, generally because of atypical cancers. Treatment is primarily preventative, involving frequent screenings and avoiding the sun or agents which cause chromosome damage.

**Gaucher disease, type 1** is caused by deficiency of the enzyme *glucocerebrosidase*, resulting in harmful quantities of a fatty substance called glucocerebroside to accumulate in the spleen, liver, lungs, and bone marrow. Onset may be early in life or delayed until adulthood, with variable problems such as easy bleeding, bruising, and anemia, skeletal weakening, liver and spleen enlargement, and lung and kidney impairment. Highly effective enzyme replacement therapy is available, but there is no cure.

**Mucopolidosis, type IV (ML4)** is caused by a gene defect that leads to severe neurological and ophthalmologic abnormalities. The earliest sign of ML4 may be corneal clouding in the first year of life, along with delayed motor milestones, mental retardation and slowly progressive neurological deterioration. Affected persons have lived into their mid 40s, but there is no therapy available. Treatment includes supportive care, such as occupational or physical therapy.

**Niemann Pick Disease, type A** is caused by lack of the enzyme acid *sphingomyelinase* (ASM), resulting in accumulation of a fatty substance called sphingomyelin, and leading to severe damage to the central nervous system, liver, and lungs. Symptoms beginning in infancy include abdominal distention, loss of milestones, blindness, progressive spasticity, enlarged liver and spleen, and a "cherry red spot" in the eye. There is currently no cure, and death usually occurs by age 2-3.

**Inheritance:** The conditions included in this screening panel are inherited in an autosomal recessive pattern (see definition above).

<b>Disease</b>	<b>Gene/Enzyme</b>	<b>Carrier Rate</b>	<b>Methodology</b>	<b>Detection Rate</b>
Bloom syndrome	BLM	1 in 100 Ashkenazi	Analysis for 1 common gene mutation	Over 97%
Fanconi Anemia, type C	FANCC	1 in 89 Ashkenazi	Analysis for 2 common gene mutations	Over 99%
Gaucher, type1	GBA Glucocerebrosidase	1 in 15 Ashkenazi	Analysis for 8 common gene mutations	Over 97%
Mucopolipidosis, type IV	MCOLN1 Mucopolipin 1	1 in 127 Ashkenazi	Analysis for 2 common gene mutations	Over 96%
Niemann Pick, type A	ASM Spingomylinase	1 in 90 Ashkenazi	Analysis for 2 common gene mutations	Over 95%

**Specimen Requirements:**

Collect 10 ml in a **purple (EDTA)** or **yellow (ACD)** top tube for DNA analysis. Send at room temperature for overnight delivery.

Please Use the Emory Genetics Laboratory Requisition form ([http://server2k.genetics.emory.edu/lab/user/pdf/Req\\_Form.PDF](http://server2k.genetics.emory.edu/lab/user/pdf/Req_Form.PDF)).

**Turnaround time** is 2 weeks.

**Prenatal testing** may be available for the above conditions. When possible, consider carrier screening on females prior to conception to facilitate early prenatal diagnosis. Carrier screening for both parents is recommended prior to testing the pregnancy.

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*If you have any questions about this information, please call Emory Genetics at (404)778-8500 or toll-free, 1-800-366-1502 and ask to speak with the Genetic Counselor on-call.*