

A LEARNING RESOURCE FOR TEACHERS, FAMILIES AND COMMUNITIES

Genetics of Albinism Inheritance

How albinism is passed from parents to children: five family scenarios explained



Presented by the Association for the Welfare of Albinos (AWA)

Understanding the Basics

Developed after AWA's pilot workshop on adapting the Teacher's Information Booklet for supporting learners with albinism in Cameroonian schools, to strengthen understanding of how albinism is inherited.

- Albinism is a genetic condition. It is not contagious, not a curse and not caused by anything the parents did.
- It is inherited in an autosomal recessive way: a child has albinism only if they receive an altered copy of the same gene from both parents.
- Everyone has two copies of each gene, one from each parent.
- A carrier has one altered copy, has no albinism and usually does not know.

Did you know? In sub-Saharan Africa the most common type is OCA2, affecting an estimated 1 in 1,500 to 1 in 3,900 people, much more than in most other regions.

LEGEND (used in every scenario)

A

Working copy of the gene (dominant)

a

Altered copy of the gene (recessive)

AA

No altered copy: no albinism

Aa

Carrier: no albinism, can pass on the altered copy

aa

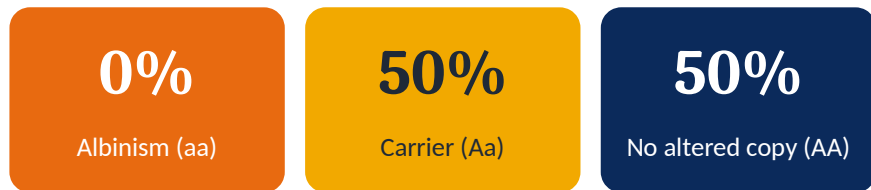
Person with albinism

SCENARIO 1

Carrier × Non-carrier

One parent is a carrier (Aa); the other has no altered copy (AA).

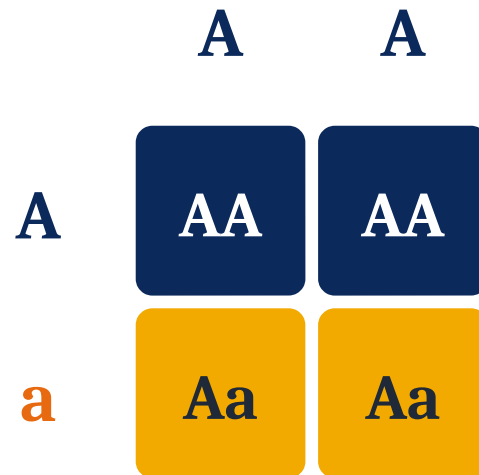
- No child will have albinism.
- Each child has a 1 in 2 chance of being a carrier.
- This combination is common and usually goes unnoticed, because no one in the family shows signs of albinism.



Key message No child with albinism; about half may be carriers.

Mother: no altered copy (AA)

Father: carrier (Aa)



The chances apply to each pregnancy separately.

SCENARIO 2

Carrier × Carrier

Both parents are carriers (Aa) and neither has albinism.

- This is how most children with albinism are born.
- Each parent passes on either the working (A) or the altered (a) copy.
- Many families only learn they are carriers when a child with albinism is born. It is no one's fault.

25%

Albinism (aa)

50%

Carrier (Aa)

25%

No altered copy (AA)

Key message The most common way albinism occurs:
both parents unaffected.

Mother: carrier (Aa)

A a

A

AA

Aa

a

Aa

aa

Father: carrier (Aa)

The chances apply to each pregnancy separately.

SCENARIO 3

Albinism × Carrier

One parent has albinism (aa); the other is a carrier (Aa).

- Each child has a 1 in 2 chance of having albinism.
- Every child without albinism will be a carrier.
- Both parents pass on at least one altered copy in this combination.

50%

Albinism (aa)

50%

Carrier (Aa)

0%

No altered copy (AA)

Key message About half of the children may have albinism.

Mother: carrier (Aa)

A a

a

Aa

aa

Father: albinism (aa)

a

Aa

aa

Assumes the carrier carries the same type of albinism. Chances apply to each pregnancy.

SCENARIO 4

Albinism × Non-carrier

One parent has albinism (aa); the other has no altered copy (AA).

- No child will have albinism.
- Every child will be a carrier (Aa).
- This is how the gene can pass silently through generations, without the family knowing.

0%

Albinism (aa)

100%

Carrier (Aa)

0%

No altered copy (AA)

Key message All children will be carriers; none will have albinism.

Mother: no altered copy (AA)

A A

a

Aa

Aa

a

Aa

Aa

Father: albinism (aa)

The chances apply to each pregnancy separately.

SCENARIO 5

Albinism × Albinism

Both parents have albinism (aa).

- Same type of albinism: every child will have albinism.
- Different types (e.g. OCA1 and OCA2): children usually do not have albinism, but carry both types.
- A health worker can explain a family's situation.

100%

Albinism (aa)

0%

Carrier (Aa)

0%

No altered copy (AA)

Key message Same type of albinism: all children are expected to have albinism.

Mother: albinism (aa)

a

a

a

aa

aa

Father: albinism (aa)

a

aa

aa

Chart shows parents with the same type of albinism.

Thank you



Key takeaways

- Albinism is inherited. Carriers can pass on the gene without having albinism.
- The parents' combination changes the chances for each child.
- Albinism is not contagious and is no one's fault. Every child with albinism deserves love, protection and an equal chance at school.

Questions? Contact AWA

+237 674 715 263 / +237 640 301 838

contact@awaforcharity.org

awaalbinism@gmail.com

www.awaforcharity.org

Bamenda, North West Region, Cameroon

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Sources: GeneReviews, Oculocutaneous Albinism Type 2 (NCBI Bookshelf); The Tech Interactive, "Can two parents with albinism have an unaffected child?" (2023). This resource is for education and does not replace advice from a health professional or genetic counsellor.