GENETICS DOMAIN | LESSON 20 OF 20 | WHOLE TEAM (HEAD MEDICAL GENETICIST AND ALL SPECIALIST SEATS)

What Is Mateo's Complete Genetic Story?

Can your team assemble every piece of evidence into one clear, well-supported genetic story for Mateo?

CARRY FORWARD

An ethical decision weighs benefit, harm, autonomy, heritability, access, and alternatives before technical possibility.

10-YEAR TAKEAWAY

Mateo's strongest genetic story is multifactorial and evidence-bounded: IRF6 explains a pathway, not a proven individual cause.

1. Observe the analogy before naming the biology

Illustration: A courtroom file separates facts, expert models, and unresolved claims

1. Which items are direct case facts?

2. Which items come from research models?

3. Which claim remains unresolved without a molecular result?

2. Turn observations into rules

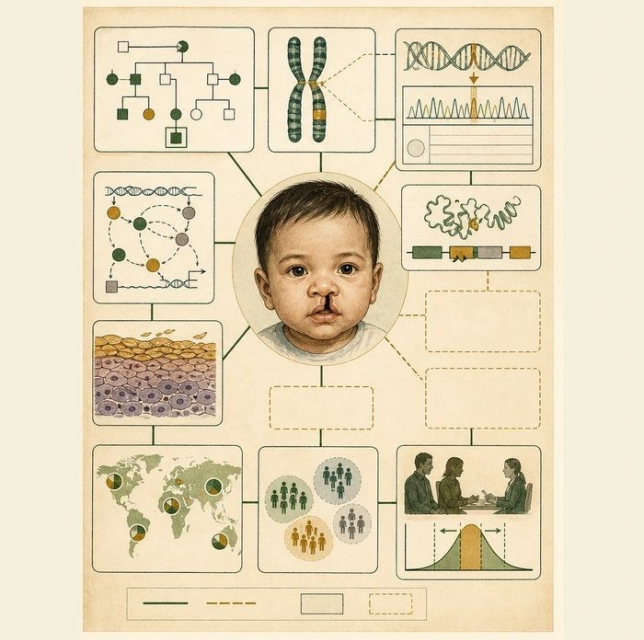
1. Rule 1: Separate patient evidence from exemplar-gene evidence. Explain it in your own words.

2. Rule 2: Link variant to molecule to cell to tissue when supported. Explain it in your own words.

3. Rule 3: End at the claim ceiling, not the most dramatic story. Explain it in your own words.

Where the analogy stops: A medical case conference is collaborative care, not an adversarial trial.

3. Map the rules onto the biomedical example



Biomedical teaching illustration: Assemble Mateo's complete genetic evidence chain

Analogy step	Biology step	How the relationship stays the same
Confirmed facts	Mateo's pedigree and phenotype	_____
Expert model	IRF6 pathway and multifactorial research	_____
Unresolved claim	Mateo's individual causal variant or exposure	_____

4. Use the case evidence

ID	Finding supplied in the case	Why it matters
GEN20-E1	Mateo has an isolated-appearing cleft and no strong family pattern in the composite file.	The case fits a multifactorial model better than a proven dominant syndrome.
GEN20-E2	IRF6 coding and regulatory studies explain how epithelial differentiation and cleft risk can change.	IRF6 is a strong pathway exemplar.
GEN20-E3	No pathogenic IRF6 result or single causal exposure is supplied for Mateo.	The individual cause remains open.

5. Make the clinical decision

You are the lead geneticist at the final conference. The team must approve one conclusion that will be shared with every other domain.

A. Use a multifactorial, IRF6-informed model while stating that Mateo's cause is unproven.

B. Declare a pathogenic IRF6 variant that was never tested.

C. Say genetics contributes no useful information.

Decision. Choose the conclusion and cite case evidence plus the molecular limit.

Claim ceiling: You may synthesize the best-supported model. You may not add a molecular diagnosis absent from the case file.

Claim. State the choice you can defend.

Evidence. Use these labeled IDs: GEN20-E1 + GEN20-E2.

Reasoning. Explain why the evidence supports the claim and stays inside the claim ceiling.

6. Reduce the lesson to one lasting idea

Take-home. Mateo's strongest genetic story is multifactorial and evidence-bounded: IRF6 explains a pathway, not a proven individual cause.

1. What is direct evidence about Mateo?

2. What useful IRF6 claim remains below the ceiling?

Glossary

Term	Plain-English definition
synthesis	Building a molecule in the cell, as in protein synthesis (making a protein from mRNA).
domain report	A focused summary of the current research and evidence within one specific topic area, used to organize knowledge before drawing conclusions.
gene regulatory network	The web of genes that turn each other on and off to control a process such as palate fusion.
haploinsufficiency	When one working copy of a gene cannot make enough product on its own, so losing the second copy causes the trait.
multifactorial inheritance	A trait caused by many small genetic and environmental factors adding up together, rather than by a single gene alone.

Next lesson unlock

The genetics team has now assembled Mateo's complete molecular story, from first clue to ethics. But genetics cannot finish his care alone. We hand the story across to the developmental, anatomical, clinical, and experimental-design teams, so each domain can do its part on how this gene shapes the embryo, the face, the surgery, and the care plan.

The journal links on the lesson page are optional. Everything required for this guided-notes set is already supplied here and in the case file.