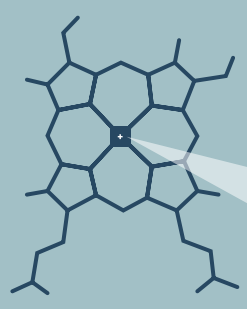
# β-THAL STARTS IN THE GENES

The role genes play in **beta-thalassemia (β-thal)**

**β-THAL** IS CAUSED BY CHANGES IN A SPECIFIC GENE CALLED THE **HBB GENE**

THE ***HBB*** **GENE** PROVIDES INSTRUCTIONS TO CREATE **β-GLOBIN**

ADULT **HEMOGLOBIN** IS MADE UP OF:



**HEME MOLECULE** *which contains* **IRON**

α **2 α-GLOBIN PROTEINS**

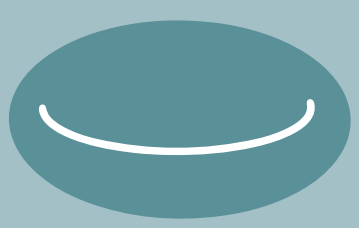
β **2 β-GLOBIN PROTEINS**

## A BALANCE OF

**BOTH GLOBIN PROTEINS** IS NEEDED TO MAKE **HEALTHY HEMOGLOBIN**

α α + β β = **2 α-GLOBIN** + **2 β-GLOBIN**

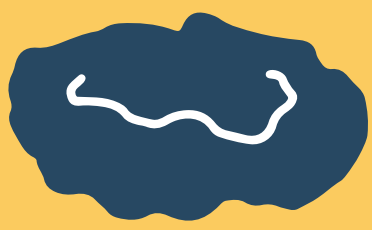
*creating healthy red blood cells*



## INCORRECT INSTRUCTIONS

FROM THE *HBB* GENE RESULT IN **REDUCED OR NO β-GLOBIN**

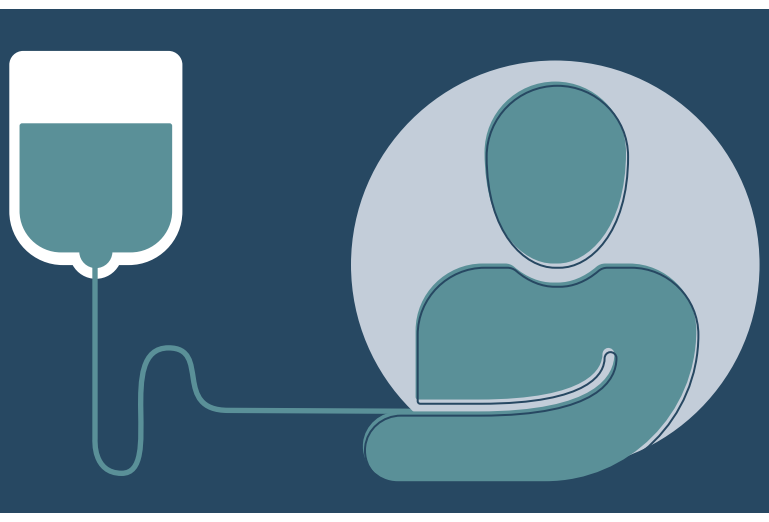
α α + β = *creating β-thal red blood cells*



## WITHOUT ENOUGH β-GLOBIN,

YOUR BODY CAN'T MAKE ENOUGH **HEMOGLOBIN**

**HEMOGLOBIN** IS A PROTEIN IN YOUR RED BLOOD CELLS THAT **CARRIES OXYGEN** TO ALL PARTS OF YOUR BODY

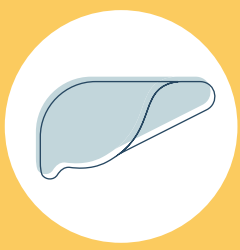


INDIVIDUALS WITH TRANSFUSION-DEPENDENT β-THALASSEMIA (TDT) DEPEND ON TREATMENT WITH **REGULAR BLOOD TRANSFUSIONS** TO MAKE UP FOR THE **LACK OF HEALTHY ADULT HEMOGLOBIN**

IF TDT IS LEFT **UNTREATED** OR IS **NOT TREATED PROPERLY**, IT CAN LEAD TO:

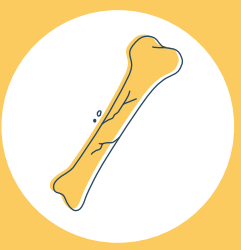
**FATIGUE/ WEAKNESS**

**PALE SKIN**

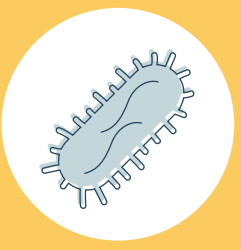


**LIVER DAMAGE**

**ENLARGEMENT OF SPLEEN**



**WEAKENING AND FRAGILE BONES**



**HIGHER RISK OF INFECTION**

It is important to talk to your doctor about managing your TDT. Be sure to ask them any questions you may have regarding your genes and TDT. You can also visit **LifeWithBetaThal.com** to learn more.