



Biology 1
Robert's Pedigree
Project

Name:
Date:
Hour:

My name is Robert Van Winkle. I'd like to tell you about an experience I had that taught me some important lessons about genetics. For years, my dad, John Van Winkle, told me stories about his family - his father and mother, two sisters and his three brothers. Our family moved from his home town in Texas to Michigan when I was 1 year old so I never really knew the people he was talking about. His stories made me very curious about all the relatives that I have never seen.

Last summer I got the chance to satisfy my curiosity. The Van Winkle family decided to have a family reunion on the Fourth of July in the old home town of Dallas, Texas. Dad could hardly wait to get back and see his family for the first time in 15 years. My mother, Marie, is from the same town, and she was eager to see her own family as well as my dad's. My 12 year old twin sisters, Laura and Mary-Jo, and my 8 year old brother Tom also had heard a lot about our relatives in Dallas. They were delighted at the thought of a trip to Dallas.

We decided to make a real vacation out of the trip to the reunion. We piled in the family station wagon and drove away from our home as Queen's "Under Pressure" blasted on the radio. We did so much sight-seeing along the way that, on the morning of July 3rd, we realized that we were still 700 miles from Dallas. The reunion was to begin the next morning at 10 o'clock. Dad said we would have to drive straight through and get a good night of sleep so that we would be ready to meet all our relatives and enjoy the reunion. It was a long, 14 hour drive. We got into Dallas about 9 o'clock on the evening of the third. Everybody was so tired that we decided to get motel rooms and go right to bed.

In spite of all the travel and excitement, I slept pretty well and so did my brother Tom and the twins. In the morning, after we got dressed, we had a late breakfast. Then we set out for Grandpa and Grandma Van Winkle's house at A1A Beachfront Avenue. We got there exactly at 10 o'clock and were amazed to find that we were the last of the Van Winkle clan to arrive at the reunion. Once we arrived Grandpa Van Winkle yelled out "All right, stop! Collaborate and listen. We can now officially begin the first annual Van Winkle family reunion!" For the next 15 minutes, there was a lot of hugging and kissing and squealing. I was introduced to all those aunts, uncles and cousins I had heard about but never met. I have to admit that it took a while to get all the names and faces straight.

After the turmoil of the initial greetings was over I was able to step back and take a better look at my relatives. It was obvious that we were all members of the same family. My dad's brother and sister were easy to spot because they look so much like him. My grandparents are older copies of their sons and daughters. The third generation - my sisters, brothers and cousins and I - are alike in many ways. At the same time, each of us has special traits that make us different. I remembered one of the big lessons I learned in biology class this year. The set of chromosomes we inherit, half from our mother's family and half from our father's family, interacting with the environment, is responsible for the similarities and differences that I was observing.

Then I noticed Grandpa Van Winkle's hands. I thought my dad was joking when he said that Grandpa Van Winkle has two little fingers (6 total fingers) on each hand. Sure enough, it was true! Then I looked at Aunt Shirley, Uncle Pat and Uncle Dave. Again, Dad was right! They too have extra little fingers. Aunt Shirley's daughter, Sue, does not have extra digits but one of Uncle Pat's three daughters, Maureen, and his only son, Mike, have the extra fingers. Uncle

Dave's boy Dan does not have extra digits, but his girl, Karen, does. Dad's sister, Betty and her son, Jim, do not have the sixth finger. Dad's brother Gary and Gary's two daughters, Patty and Barbara, also do not have the sixth finger. Nobody in my immediate family has this odd trait.

After my final observation of this variation in our family, I promptly forgot about it. I spent the rest of the day meeting, talking and playing catch with my grandparents, my five aunts and uncles, my ten cousins and, of course, my own immediate family. The big event of the day was a sit-down dinner that evening. We ate one of the best meals I have ever had. Many stories were told and every one of the 28 members of the family was included in the stories at least once. Before we knew it, it was nearly midnights and time for the reunion to end.

We said "good night" to everyone and went back to our motel, where we talked for another hour or so. We spent two more days in Dallas visiting my parents' old friends and my mother's family. We also did some fishing and picnicking in the country around Dallas.

It wasn't until we were back in Michigan that I remembered the variation that I have observed in my grandpa, my aunt, two uncles and three cousins. I knew this had to be a genetic characteristic, but I was curious to find out more about it. I'm not just into writing rhymes and rapping. I pay attention in school too. I remembered, in my biology class, I had learned that one of the first things you should do to learn about a trait is to make a family history and trace the characteristic through the family. You use a square to stand for a male and a circle to represent a female. You shade in the squares and the circles that represent the people who have the characteristic (in this case, the extra finger). With that little background, a family history, or pedigree, can be constructed.

Instructions:

Construct the most complete pedigree possible for the Van Winkle family. Beneath the pedigree answer this question in complete sentences: Is the trait for the extra digit in the Van Winkle family autosomal dominant, autosomal recessive or sex-linked recessive? Give at least two reasons why you can say this (you may use direct evidence from the family tree you construct). Be sure to clearly include your name and hour on the pedigree.

Grading Rubric:

Completion & Convention - 4 points each

- Every family member is in proper relation and identified
- Proper symbol used for male & female
- Proper pedigree layout - generations in line, offspring chronological, spacing etc
- Proper shading
- Overall neatness

Genetic Interpretation - 5 points each

- Alleles/Genotypes for each individual
(half shading for heterozygotes if designated recessive)
- Interpretation of the trait (sex-linked, autosomal dominant, autosomal recessive) and statement defending the selection

Total 30 Points