

**Interesting Cartoon Genetics  
Dihybrid Crosses**

**Part I: SpongeBob Genetics**

Trait	Dominant Gene	Recessive Gene
Body Shape	Squarepants (S)	Roundpants (s)
Body Color	Yellow (Y)	Blue (y)
Eye Shape	Round (R)	Oval (r)
Nose Style	Long (L)	Stubby (l)



1. SpongeBob's aunt, who is a roundpants, has a cute stubby nose. She has finally found the sponge of her dreams and is ready to settle down. Her fiancé always comments on how adorable her nose is (he says it reminds him of his mother's – aww, how sweet!). They wonder what the chances are of that trait being passed on. Her fiancé is a purebred squarepants and has long nose. Complete a Punnett Square and answer the following questions.

What are the chances of having a roundpants baby? \_\_\_\_\_  
 What are the chances of having a squarepants baby? \_\_\_\_\_  
 What are the chances of having a squarepants baby with a stubby nose? \_\_\_\_\_

2. Determine the possible outcome of a mating between SpongeBob, who is heterozygous for both his yellow body color and squarepants, and his wife SpongeSusie, who is blue and also has roundpants. Show your work in a Punnett square in the space below.

What is the chance of a blue baby? \_\_\_\_\_  
 What is the chance of a squarepants? \_\_\_\_\_  
 What is the chance of a blue squarepants? \_\_\_\_\_  
 What is the chance of a purebred recessive for both traits? \_\_\_\_\_

3. In starfish, pink body color (P) is dominant to orange (p), and thick eyebrows (T) are dominant over thin (t) ones. Patrick, who is heterozygous for body color but purebred for thick eyebrows, has met Patti, who is recessive for both traits. Is it possible for the new couple to have offspring that resemble their mother? Explain.



4. While Squidward's family boasts about being a purebred line for dominant light blue skin color, they are also purebred for a less distinguished trait: the recessive trait of baldness. Squidward has found a potential bride prospect with the green squid Octavia. While Octavia has hair, her father does not. Complete a Punnett square to show your work.

<b>Squidward Traits:</b>
Skin Color
Blue = B, Green = b
Hair
Hair = H, Bald = h

What is the probability of their children being blue and having hair? \_\_\_\_\_  
 What is the probability of their children being green and bald? \_\_\_\_\_  
 What is the phenotypic ratio? \_\_\_\_\_

Now that you have mastered dihybrid crosses using Bikini Bottom Genetics. Let's figure out...