

Copymasters

Copymaster 1.1
Late Breaking News: Gene for Intelligence Discovered

The Gotham Daily Herald

Special Edition

January 1, 2000

Late Breaking News: Gene for Intelligence Discovered!



Dr. I.Q. Cerebrum announces the discovery of the intelligence gene.

BOSTON. Yesterday, scientists made the startling announcement that they have located a single gene that accounts for human intelligence. Almost unbelievably, this one gene appears to determine the degree of intelligence that any given individual will have in his or her lifetime. The intelligence gene has only two different alleles. Researchers are testing the hypothesis that the intelligence trait shows a codominant inheritance pattern.

Copymaster 2.1
Human Variation Worksheet—Female

In this model, six genes, each with two alleles, influence height, and various environmental factors influence height depending on the stage of development. Your teacher will provide the numerical values of the various colored beads for both genetic and environmental effects *after* you have completed the drawing the beads.

Part I: Modeling Genetic Influence

Gene	Bead Color	Effect in cm
1		
2		
3		
4		
5		
6		

Genetic influence _____

Part II: Modeling Environmental Influence

Factor	Bead Color	Effect in cm
Prenatal		
Childhood		
Adolescence		

Environmental influence _____

Females' starting height: 165 cm

Final height = starting height + genetic influence + environmental influence

Final height = _____ + _____ + _____ = _____ cm

Copymaster 2.2
Human Variation Worksheet—Male

In this model, six genes, each with two alleles, influence height, and various environmental factors influence height depending on the stage of development. Your teacher will provide the numerical values of the various colored beads for both genetic and environmental effects *after* you have completed drawing the beads.

Part I: Modeling Genetic Influence

Gene	Bead Color	Effect in cm
1		
2		
3		
4		
5		
6		

Genetic influence _____

Part II: Modeling Environmental Influence

Factor	Bead Color	Effect in cm
Prenatal		
Childhood		
Adolescence		

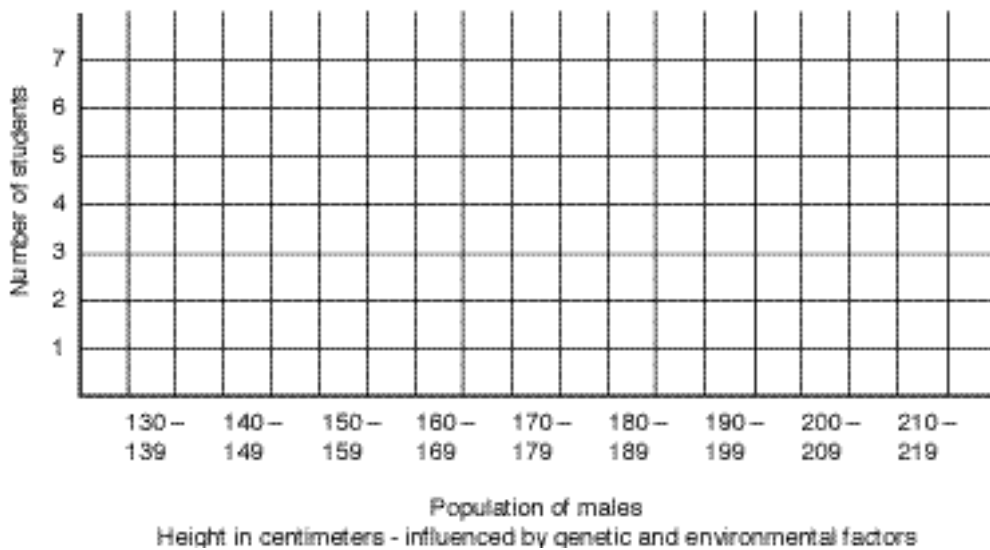
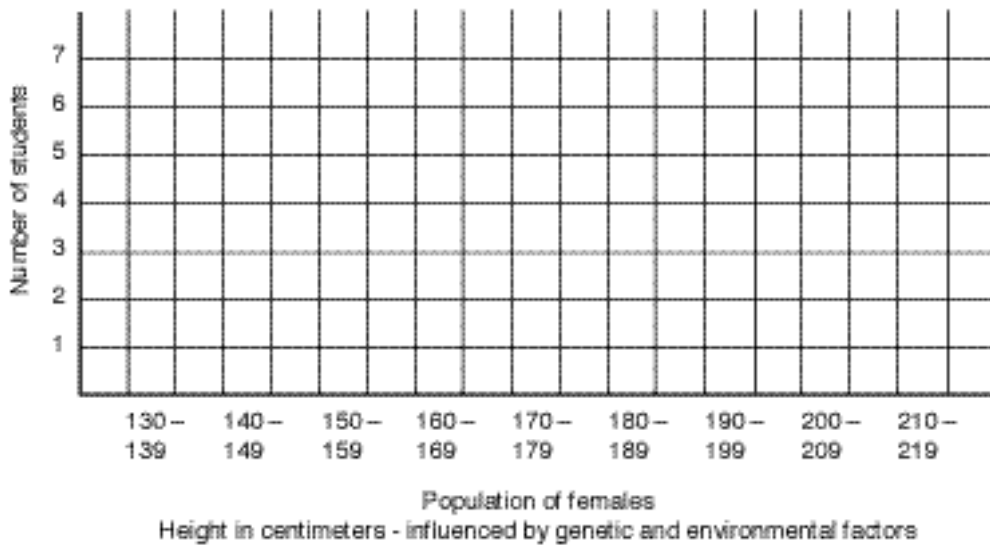
Environmental influence _____

Males' starting height: 175 cm

Final height = starting height + genetic influence + environmental influence

Final height = _____ + _____ + _____ = _____ cm

Copymaster 2.3 Histogram Template for Heights



Copymaster 2.4
Modeling Genetic and Environmental Influences

Part I: Modeling Genetic Influence

For each of the six genes:

red allele +2 cm

white allele -2 cm

Part II: Modeling Environmental Influence

Prenatal

orange factor -4 cm Mother smoked 1 1/2 packs of cigarettes a day and was a heavy drinker of alcoholic beverages.

yellow factor 0 cm Mother was on a very low protein diet and sought no prenatal care.

green factor +2 cm Family income below poverty level, but the family did its best to provide the mother with adequate nutrition and prenatal care; no maternal smoking, no alcohol intake.

blue factor +4 cm Mother had normal nutrition, no alcohol intake or smoking, and good prenatal care.

Childhood

orange factor -4 cm Chronic kidney infection leading to renal failure and transplant of a kidney at age ten years.

yellow factor -2 cm Family income below poverty level, inadequate nutrition.

green or blue factor 0 cm No environmental factors sufficient to affect adult height for green or blue.

Adolescence

orange factor -2 cm Severe nutritional deprivation; for example, diet consisting of mostly junk foods; anorexia and/ or bulimia.

yellow, green, or blue factor 0 cm Free of chronic disease, adequate nutrition.

Copymaster 3.1 **Novelty-Seeking Survey**

Do not write on this survey.

Keep a tally on a separate piece of paper of how many items you respond “yes” to.

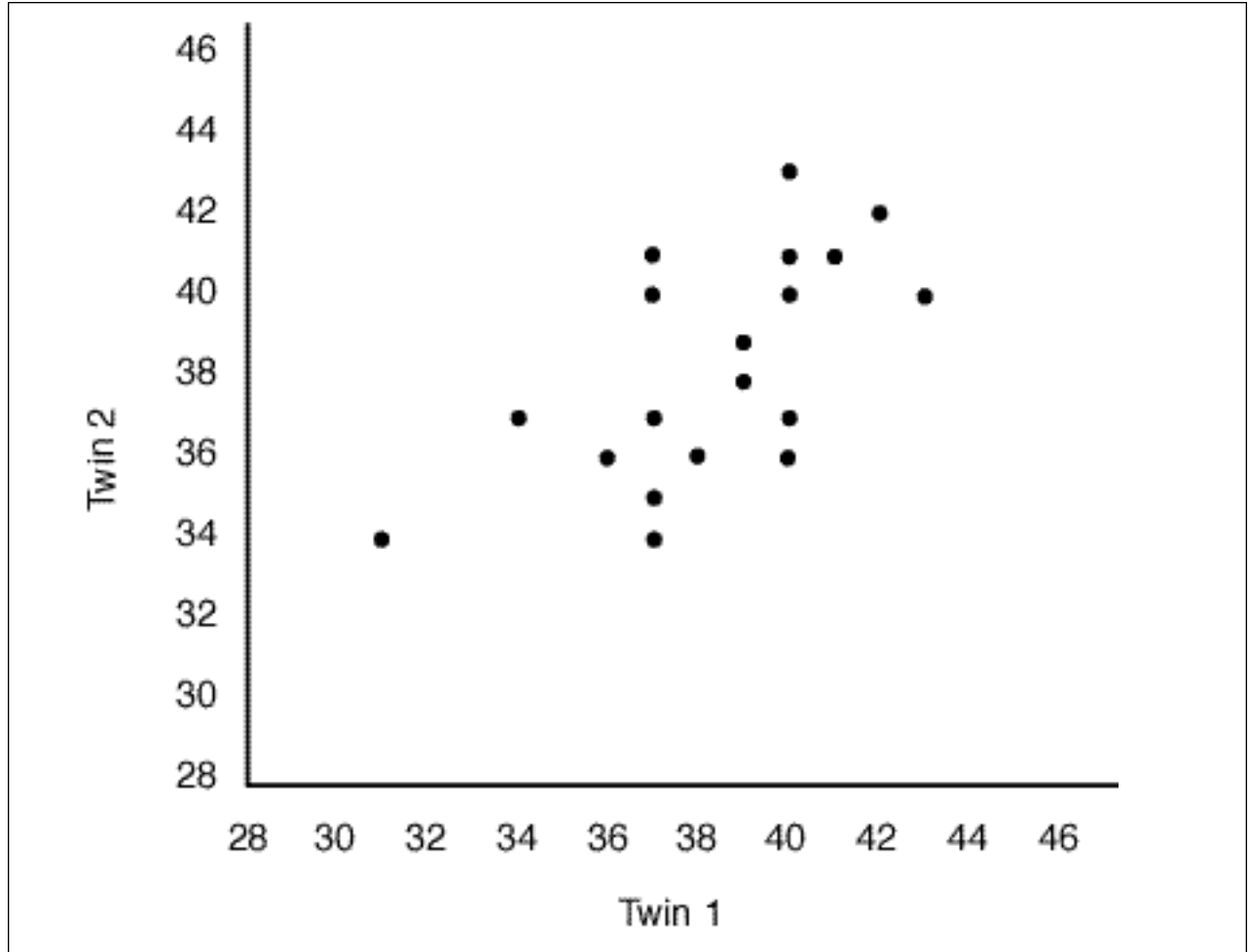
Which of the following have you done or would you be willing to do?

1. jump from a 20-foot cliff into 10 feet of water
2. drive a car 100 mph
3. travel alone to a new city
4. ride a motorcycle without a helmet
5. hitchhike a ride from a stranger
6. play a sport you've never tried with strangers
7. pierce a body part other than your ear
8. dye your hair blue
9. go up in the space shuttle
10. sleep out overnight, alone in a forest
11. go up in a hot air balloon
12. take a trip in a submarine
13. sky dive
14. enter a burning building to rescue a cat or dog
15. scuba dive in shark-infested waters
16. crawl in a cave without a flashlight
17. hit a stranger in an argument
18. go for a ride in a small plane
19. take care of a beehive (wearing a bee suit)
20. ride a horse
21. target shoot with a handgun
22. accelerate to make it through a yellow traffic light
23. drink something blue
24. volunteer to give a class report first
25. travel to a non-English-speaking country
26. ride without a seatbelt in a car going more than 75 mph
27. participate in underage drinking
28. let a friend who was drunk drive you home
29. date a person of an ethnicity other than your own
30. eat raw fish (sushi)
31. support an unpopular viewpoint or person in front of your friends
32. pet a lion or tiger
33. hold a nonpoisonous snake
34. poke a rattlesnake with a stick
35. white-water raft
36. go over Niagara Falls in a barrel
37. climb a mountain
38. rappel (slide down ropes to descend a cliff)
39. drink water directly from a stream
40. eat something if you didn't know what it was
41. eat your taco if it fell on the restaurant floor

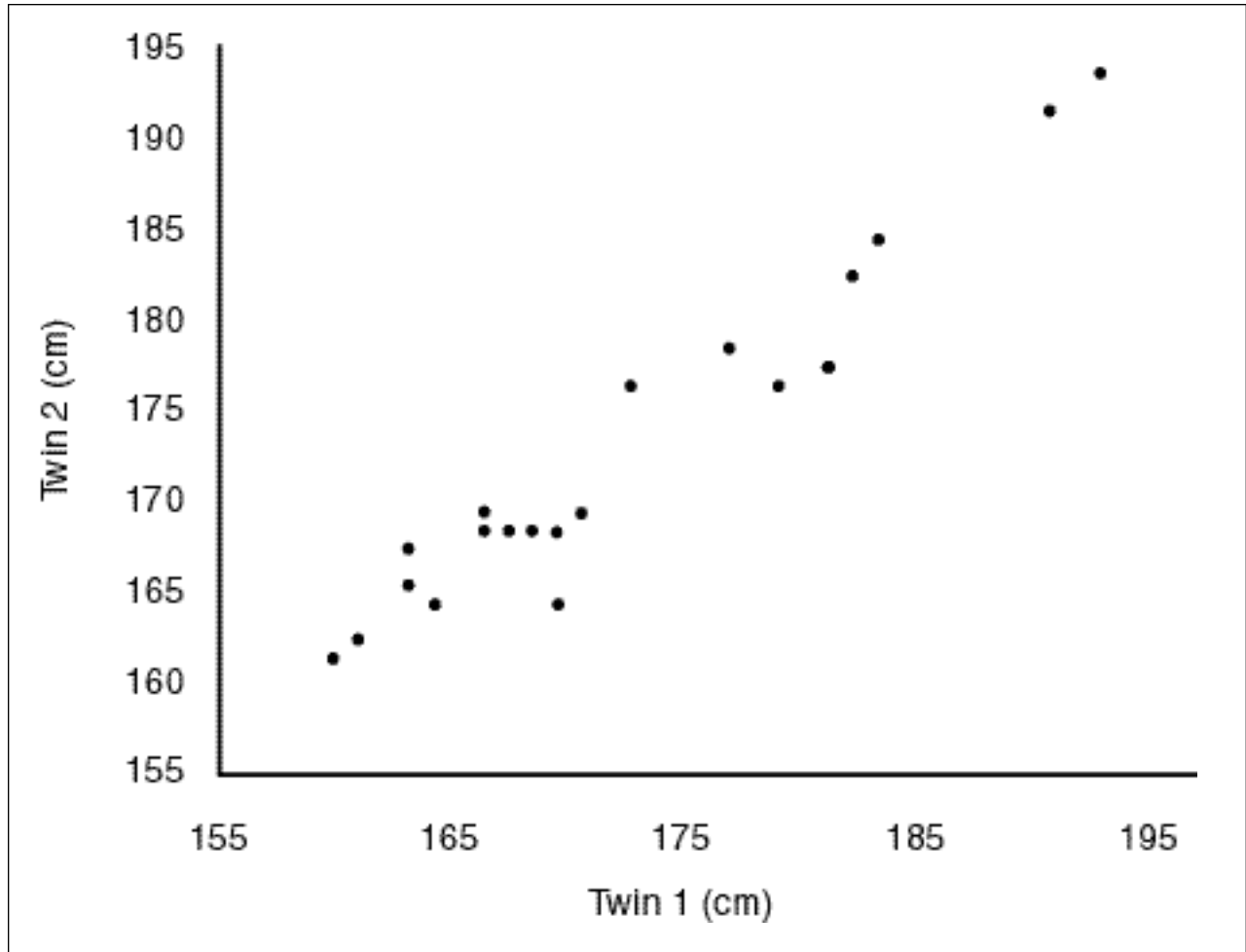
Copymaster 3.1 (continued)
Novelty-Seeking Survey

42. sit on a public toilet seat without wiping it off
43. sing in front of an audience
44. donate blood
45. wear your older brother's shirt if you knew he didn't want you to
46. cross the street without looking
47. ride the subway after midnight in New York City
48. downhill ski
49. go out on a blind date
50. walk home alone at night in a big city
51. wear more than six articles of jewelry
52. get a tattoo on a visible part of your body
53. bungee jump
54. work in a basement with lots of spiders
55. ride on the hood of a car
56. peaceably protest an apparent injustice
57. donate a kidney to an ailing relative
58. be first to walk across a frozen pond
59. take the final shot that will win or lose a basketball game
60. ask a girl/boy for a date
61. shoot off fireworks
62. participate in a human rights demonstration
63. take the first ride on a new roller coaster
64. ride with no hands on a roller coaster
65. go to a horror movie

Copymaster 3.2
Scatterplot of Novelty-Seeking Score Data for Identical Twins



Copymaster 3.3
Scatterplot of Height for Identical Twins

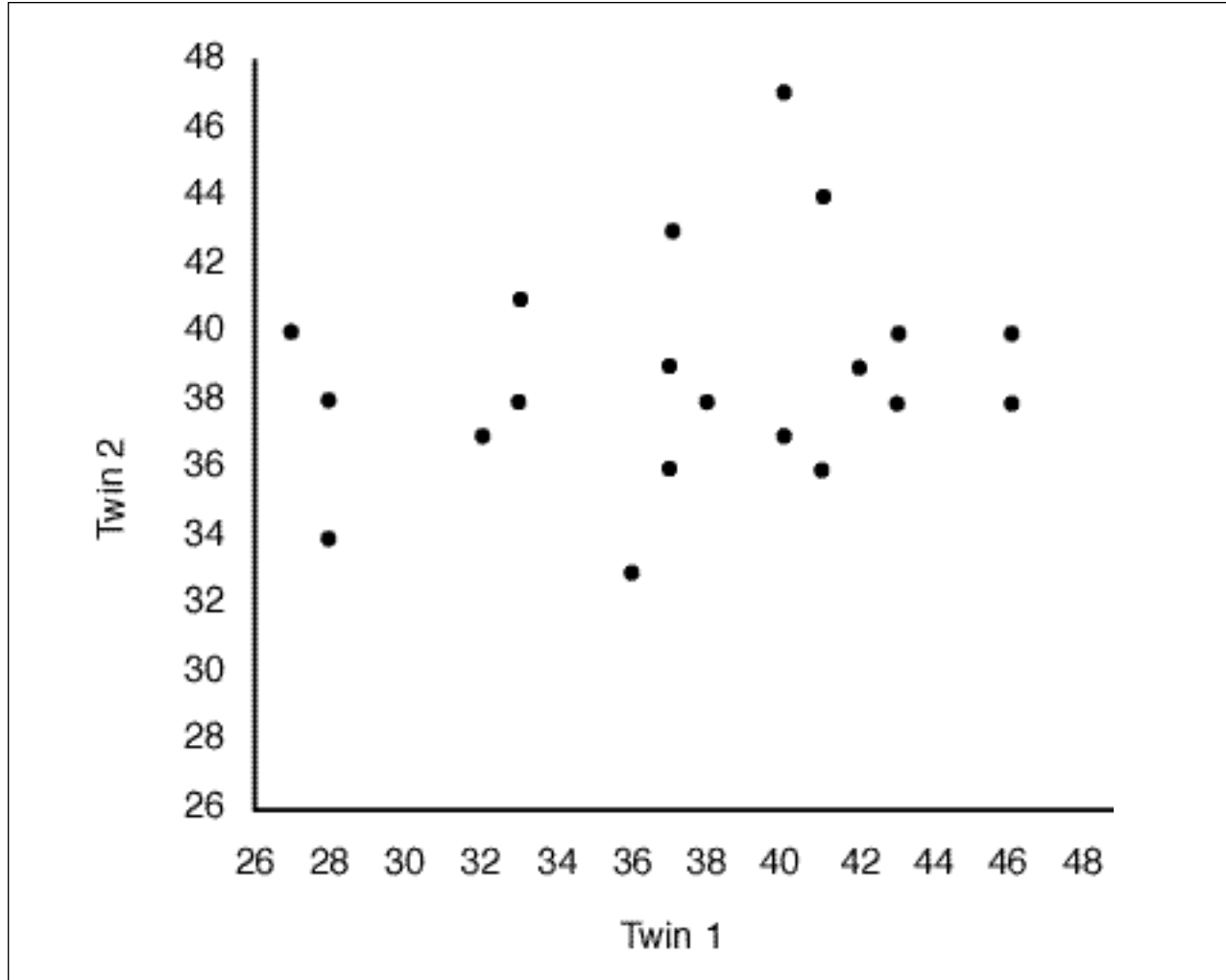


Copymaster 3.4
Novelty-Seeking Score Data for Fraternal Twins

The results of the novelty-seeking tests for fraternal (nonidentical) twins are shown below.

Twin Pair	Novelty-Seeking Score for Twin 1	Novelty-Seeking Score for Twin 2
A	40	37
B	41	36
C	43	40
D	32	37
E	46	40
F	27	40
G	42	39
H	33	38
I	37	43
J	28	38
K	43	38
L	38	38
M	33	41
N	36	33
O	41	44
P	37	39
Q	40	47
R	37	36
S	46	38
T	28	34

Copymaster 3.5
Scatterplot of Novelty-Seeking Score Data for Fraternal Twins



Copymaster 4.1
Group IA Research Subjects:
Genotypes and High Novelty-Seeking Scores

Research Subject 1 - Novelty-Seeking Score = 42

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC

Research Subject 2 - Novelty-Seeking Score = 44

CTM1 Gene, Allele A: AGGCTCACACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC

Research Subject 3 - Novelty-Seeking Score = 43

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC

Research Subject 4 - Novelty-Seeking Score = 42

CTM1 Gene, Allele A: AGGCTCACACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC

Research Subject 5 - Novelty-Seeking Score = 41

CTM1 Gene, Allele A: AGGCTCACACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAATCGGACGTACC

Copymaster 4.2
Group IB Research Subjects:
Genotypes and High Novelty-Seeking Scores

Research Subject 6 - Novelty-Seeking Score = 45

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 7 - Novelty-Seeking Score = 44

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 8 - Novelty-Seeking Score = 42

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 9 - Novelty-Seeking Score = 41

CTM1 Gene, Allele A: AGGCTCACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 10 - Novelty-Seeking Score = 44

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Copymaster 4.3
Group 2A Research Subjects:
Genotypes and Low Novelty-Seeking Scores

Research Subject 11 - Novelty-Seeking Score = 33

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 12 - Novelty-Seeking Score = 35

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 13 - Novelty-Seeking Score = 34

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 14 - Novelty-Seeking Score = 36

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 15 - Novelty-Seeking Score = 35

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Copymaster 4.4
Group 2B Research Subjects:
Genotypes and Low Novelty-Seeking Scores

Research Subject 16 - Novelty-Seeking Score = 37

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 17 - Novelty-Seeking Score = 36

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 18 - Novelty-Seeking Score = 35

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 19 - Novelty-Seeking Score = 33

CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

Research Subject 20 - Novelty-Seeking Score = 36

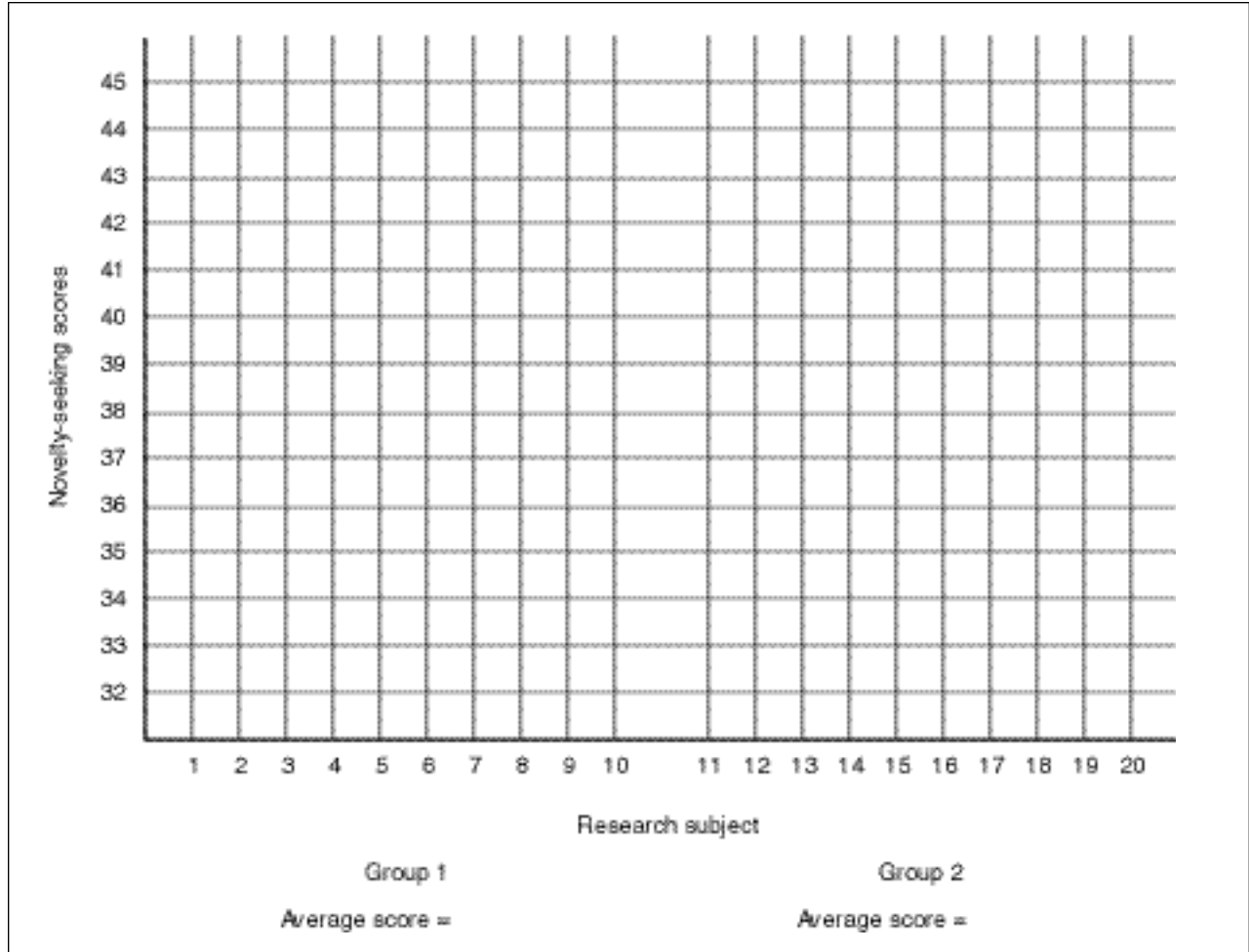
CTM1 Gene, Allele A: AGGCTCACACACACATTGGC
 CTM1 Gene, Allele B: AGGCTCACACACATTGGC

RCM3 Gene, Allele A: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC
 RCM3 Gene, Allele B: TTACGTTGACCACTGGACCCAGTAGTAGTAGTAGTAGTAGTCCTTGAAAATCGGACGTACC

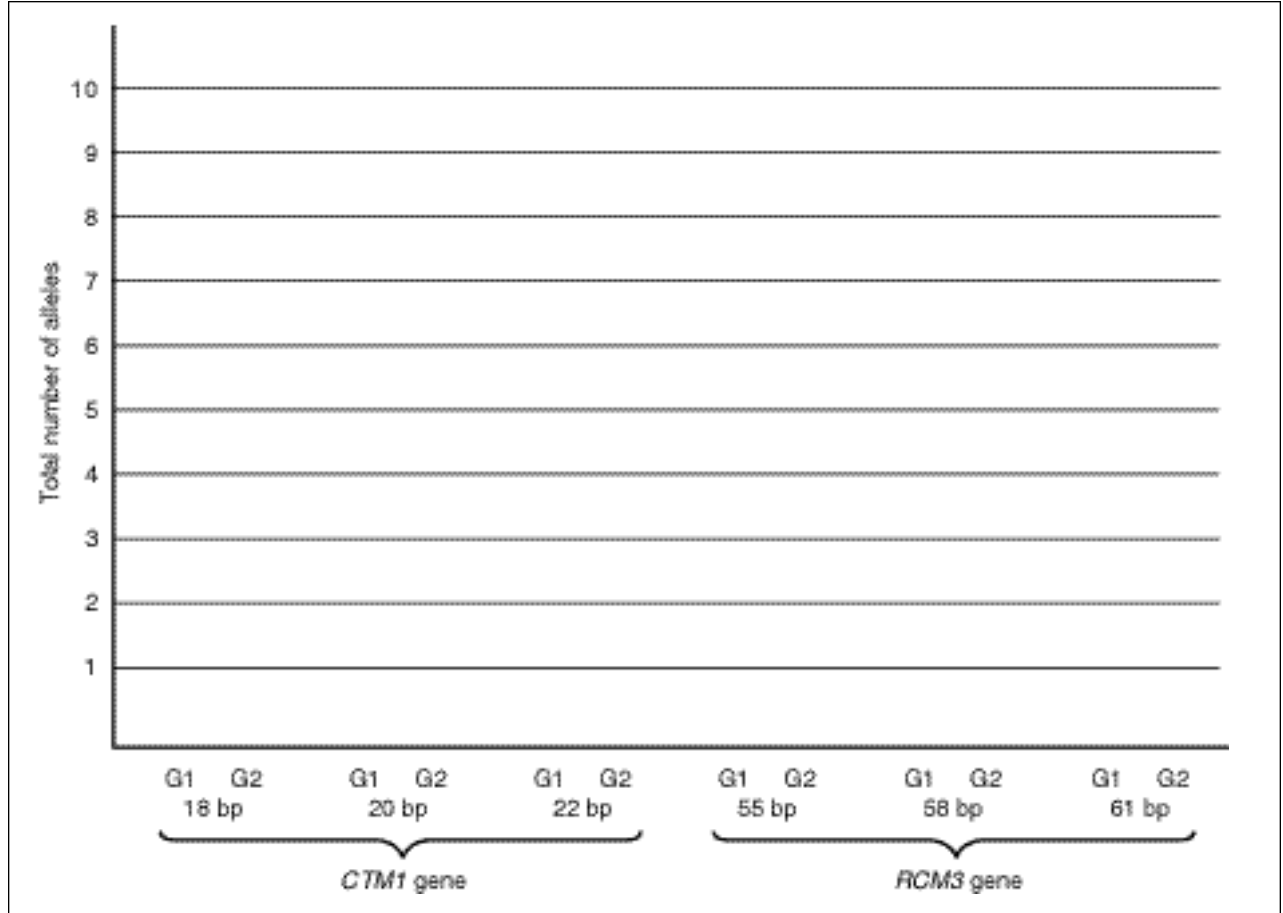
Copymaster 4.5 Gel Template Sheet

Group 1											Group 2									
Research subject											Research subject									
1 2 3 4 5 6 7 8 9 10											11 12 13 14 15 16 17 18 19 20									
CTM1 gene																				
	Number of 22-bp alleles =										Number of 22-bp alleles =									
	Number of 20-bp alleles =										Number of 20-bp alleles =									
Number of 18-bp alleles =										Number of 18-bp alleles =										
Research subject											Research subject									
1 2 3 4 5 6 7 8 9 10											11 12 13 14 15 16 17 18 19 20									
FCM3 gene																				
	Number of 61-bp alleles =										Number of 61-bp alleles =									
	Number of 58-bp alleles =										Number of 58-bp alleles =									
Number of 55-bp alleles =										Number of 55-bp alleles =										

Copymaster 4.6
Graph Template for Novelty-Seeking Score Data



Copymaster 4.7 Histogram Template for Allelic Frequencies



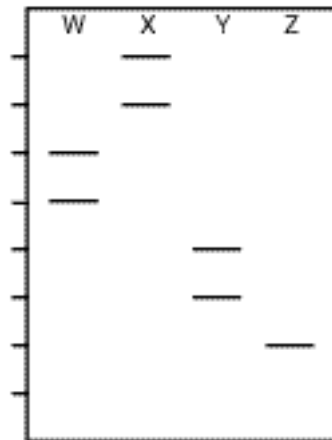
Copymaster 5.1
Reasons in Favor of and Against Paula's Law

In favor of legislation	Against legislation

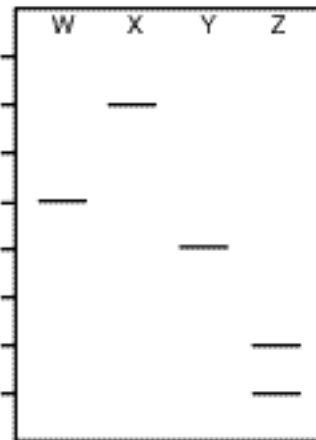
Cpymaster 5.2 Applegate Genotype Results

Gel electrophoresis results from the PCR tests
conducted on all four risk genes

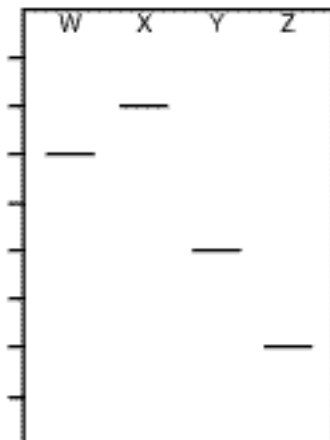
Marcia Applegate



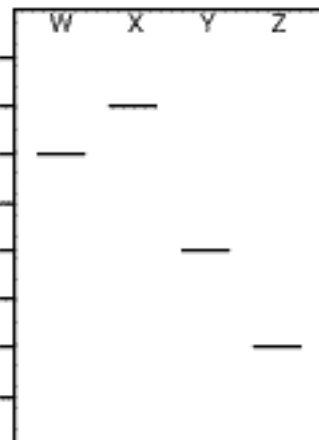
Senator Applegate



Paula Applegate



Bob Applegate



Henrietta Applegate

