

Tetrad Analysis Homework – Answer Key

Problem 1

1 = b	Tetrad III is the lowest in number = double recombinant; HIS changed linkage → HIS is in the middle
2 = c	$HIS - TRP = 0.5(IV+II)/600 \times 100 = 0.5(73+4)/600 \times 100 = 6.42$
3 = a	$HIS - MAT = 0.5(II+III)/600 \times 100 = 0.5(62+4)/600 \times 100 = 5.5$
4 = d	$MAT - TRP = 5.5 + 6.42 = 11.92$

Problem 2

5 = a	Tetrad II is the lowest in number = double recombinant; MAT changed linkage → MAT is in the middle
6 = c	$HIS - TRP = 3.21 + 2.5 = 5.71$
7 = a	$HIS - MAT = 0.5(III+II)/1200 \times 100 = 0.5(75+2)/1200 \times 100 = 3.21$
8 = b	$MAT - TRP = 0.5(IV+II)/1200 \times 100 = 0.5(58+2)/1200 \times 100 = 2.5$

Problem 3

9 = c	Tetrad IV is the lowest in number = double recombinant; TRP changed linkage → TRP is in the middle
10 = a	$HIS - TRP = 0.5(III+IV)/611 \times 100 = 0.5(59+6)/611 \times 100 = 5.32$
11 = d	$HIS - MAT = 2.37 + 5.32 = 7.69$
12 = b	$MAT - TRP = 0.5(II+IV)/611 \times 100 = 0.5(23+6)/611 \times 100 = 2.37$

Problem 4

13 = c	MAT/LEU & URA/LEU → PD = NPD MAT/URA → PD>T → MAT & URA are linked LEU unlinked
14 = c	$MAT-URA = 0.5(III+IV)/600 \times 100 = 0.5(33+21)/600 \times 100 = 4.5$

Problem 5

15 = a	MAT/LEU & MAT/URA → PD = NPD LEU/URA → PD>T → LEU & URA are linked MAT unlinked
16 = a	$LEU - URA = 0.5(III+IV)/600 \times 100 = 0.5(25+21)/684 \times 100 = 3.36$

Problem 6

17 = c	MAT/LEU & URA/LEU → PD = NPD MAT/URA → PD>T → MAT & URA are linked LEU unlinked
18 = e	$MAT - URA = 0.5(III+IV)/400 \times 100 = 0.5(16+20)/400 \times 100 = 4.5$

Problem 7

19 = c	in NR no marker switches → tetrad c
20 = a	$NR = 500-31-45-1 = 423$
21 = d	in 1X0 MAT switches → tetrad d
22 = c	$1X0 = 2(cM/100)500 - 2X0 = 2(0.32)500-1 = 31$
23 = b	in 1X0 ARG switches → tetrad b
24 = b	$1X0 = 2(cM/100)500 - 2X0 = 2(0.46)500-1 = 45$
25 = a	in 2X0 middle marker switches → THR switched in tetrad a
26 = a	$2X0 = 2(cM\#1/100)(cM\#2/100)500 = 2(0.46)(0.32)500 = 1.47 = 1$

Problem 8

27 = c	in NR no marker switches → tetrad c
28 = c	NR = 900-39-65-2 = 794
29 = d	in 1X0 MAT switches → tetrad d
30 = a	$1X0 = 2(cM/100)900 - 2X0 = 2(0.23)900 - 2 = 39$
31 = a	in 1X0 THR switches → tetrad a
32 = e	$1X0 = 2(cM/100)900 - 2X0 = 2(0.37)900 - 2 = 65$
33 = b	in 2X0 middle marker switches → ARG switched in tetrad b
34 = b	$2X0 = 2(cM\#1/100) (cM\#2/100)900 = 2(0.23) (0.37)900 = 1.53 = 2$

Problem 9

35 = c	in NR no marker switches → tetrad c
36 = d	NR = 500-24-54-1 = 421
37 = b	in 1X0 ARG switches → tetrad b in
38 = e	$1X0 = 2(cM/100)500 - 2X0 = 2(0.55)500-1 = 54$
39 = a	1X0 THR switches → tetrad a
40 = b	$1X0 = 2(cM/100)500 - 2X0 = 2(0.25)500-1 = 24$
41 = d	in 2X0 middle marker switches → MAT switched in tetrad d
42 = a	$2X0 = 2(cM\#1/100) (cM\#2/100)500 = 2(0.25) (0.55)500 = 1.38 = 1$