9/28/53 Test for amt. Fe^{59} nec. to measure clearance & Fe^{59} in RBC.

Rat #1 (Rt. ear V)
0.5 cc $Fe^{59}SO_4$ inj. via tail vein at 3:10 P.M.

Sample # 1 - 17 min. ? or 12 min.?
Sample # 2 - 29 min.
Sample # 3 - 4:09 (59')
#4 5:10 (120')
Fe sample 5:13 (123')
#5 - 6:10 (180')
#6 - 7:14

Rat #2 (Rt ear - V V)
0.3 cc $Fe^{59}SO_4$ inj 3:53
Sample #1 4:03½ - 10½ min.
#2 4:23 = 30 min
#3 4:53 = 60 min.
Fe sample 4:55 (= 62 min.)
#4 5:53 (120')
#5 6:53 (180')
#6 7:55

Rat #3 (left ear V)

1.0cc $Fe^{59}SO_4$ injected I.V. 4:39 PM 9/28/53

#1 – 5:50 PM 9/29

~~#2 11:45 AM 9/30~~

Rat #4 (left ear VV)

0.50cc $Fe^{59}SO_4$ I.V. 4:46 PM. 9/28/53

#1 5:55 PM 9/29

#2 11:45 AM 9/30

Rat #1 (rt ear V) con't

Data RBC Fe^{59}

~~#1 6:03 PM 9/29~~

#1 7:10 PM 9/29

Counts:

Cups #1 - 128 c / 4.90 min = 26 /min
#2 - 128 / 3.67' = 35 /min.
#3 - 128 / 2.53 = 50 /min
#4 128 / 3.92 = 32
#5 128 / 5.54 = 23

All too high

New cups gotten.

#3 - 128 / 6.96' = 18 cts /min. 19
#12 128 / 6.34' = 20 cts /min.

Cup		256 cts.	cts/min	cu.	
a	53.5 λ $FeSO_4$				
	95.5 λ H_2O	*1024 cts	488	469	
	95.5 aliquot	2.10'			cts/min/cc sample
1.	1 ①	512 / 6.76'	76	57	596
2.	1 ②	256 / 3.65'	70	51	534
3.	1 ③	256 / 4.80	53	34	356
	may be wrong sample				
4.	1 ④	256 / 7.19	36	17	
5.	1 ⑤				
6.	1 ⑥	not counted			

7 2(1) 256/ (discarded by mistake)

8 2(2) 256/5.08' 50/mm

9 2(3) not counted; too weak

10 2(4)

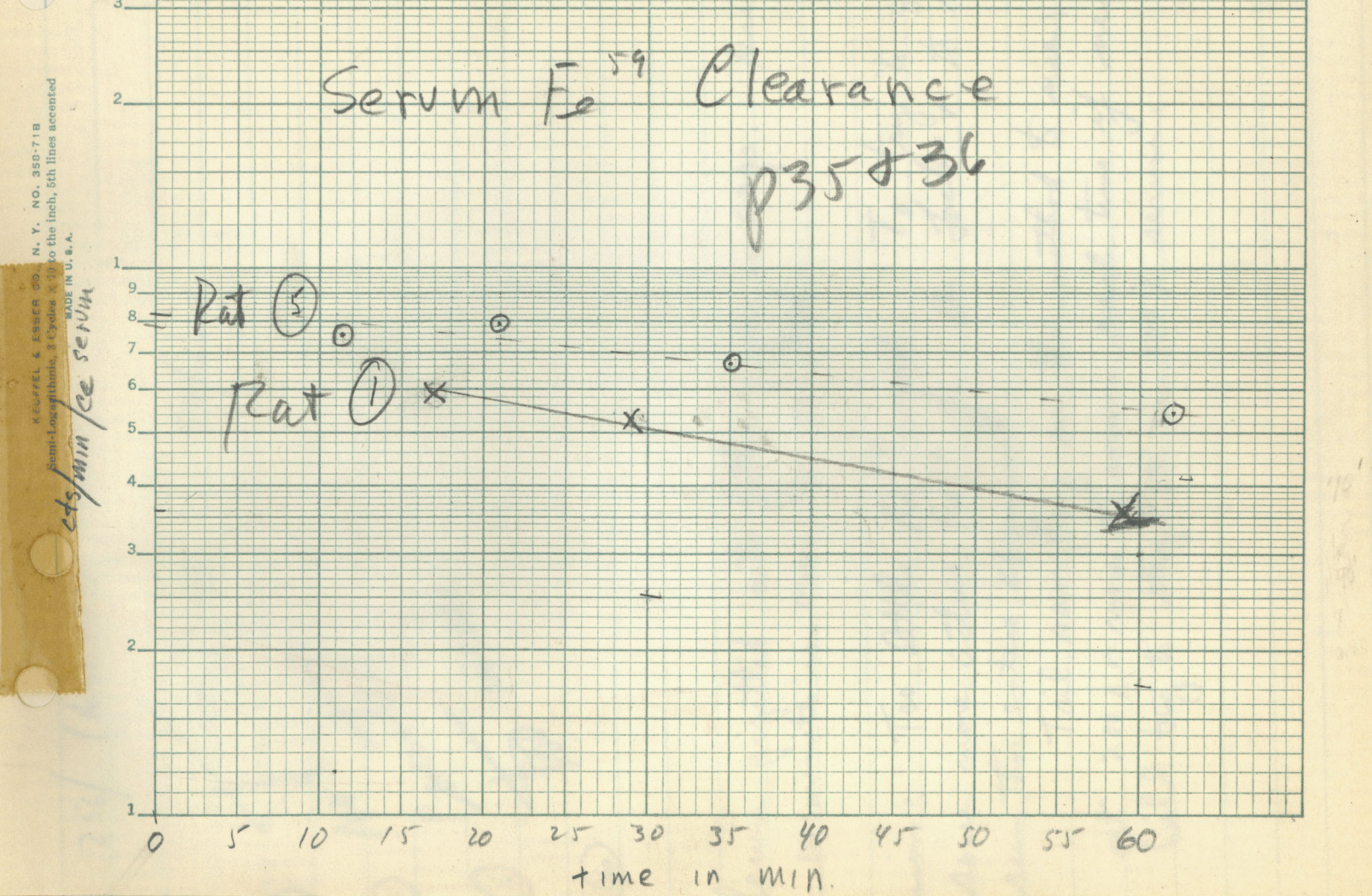
11 2(5)

13 2(6)

95.5λ serum pipetted onto filter paper in cups. Dried for 10 minutes in oven & counted.

Conclusion: Too little Fe^{59} used. To try & get some more active Fe^{59} fr. Dr. Jacobs & to re-run this entire experiment.

Tail sampling is the method to use; can get 200λ or more of serum each time if necessary. Will try to stay at ca. 100λ serum.


Serum Fe^{59} Clearance
p35 & 36
Rat ⑤
Rat ①
cts/min/cc serum
time in min.
0 5 10 15 20 25 30 35 40 45 50 55 60
1 2 3 4 5 6 7 8 9 1 2 3

Note: New $Fe^{59}PO_4$ = 9.6 δ Fe/cc

RBC Fe^{59} (rats 2+3) + miscellaneous samples
Using flow counter. Background = 512/70' = 7/min
1024 cts

1. Stock $Fe^{59}SO_4$ ~~+38'~~ 53.5 λ + 95.5 λ H_2O Aliquant 95.5 λ H_2O	512/0.43	1190/min.	1083
2. 1:10 $Fe^{59}SO_4$ (new stuff) quant. sim to above	1024/.66'	1552	1545
3. $Fe^{59}PO_4$ quant sim. to above	1024/1.38	742	735
4. 3-(1) 53.5 λ	1024/4.26	241	234
5. 4-(1) 95.5 λ	1024/2.51	408	401
6. 1-(1) (RBC) 95.5 λ	1024/8.46'	121	114
7. 1-(F_0) 53.5 λ	256/6.93	37	30

8 2 - (Fe) 256/6.54 39 32
53.5λ

9 4 - ① 512/4.37 117 110
53.5 λ on
dise directly +
evap.

10. 1 - ① 512/4.28
53.5λ as in
#9
Better spread than 9

c whole blood hemolyzed the filter paper curls on drying. Also it is difficult to get uniform spread on filter paper using whole blood. Variation in this spread would of course vary the degree of absorption of β-rays. Since the reading of whole blood (95.5λ), using 0.5 cc $Fe^{59}SO_4$ injection, is in the range of 400 cts/min, I might try diluting the blood 1:1 c water to see if spread on filter paper becomes more uniform.

Using the flow counter I should be able to do Clearances c 0.5 cc $Fe^{59}SO_4$, getting readings on 100 λ serum of around 100-150 cts/min.

The 1:10 $Fe^{59}SO_4$ (dated Jan 53) I got from Dr. Loeb is ca. 1½ X as active as the old $Fe^{59}SO_4$.

To check:

(1) Duplicate blood samples for Fe^{59}, using 1:1 dilution ē water.

(2) Serum clearance using 0.5 cc $Fe^{59}SO_4$ + the flow counter.