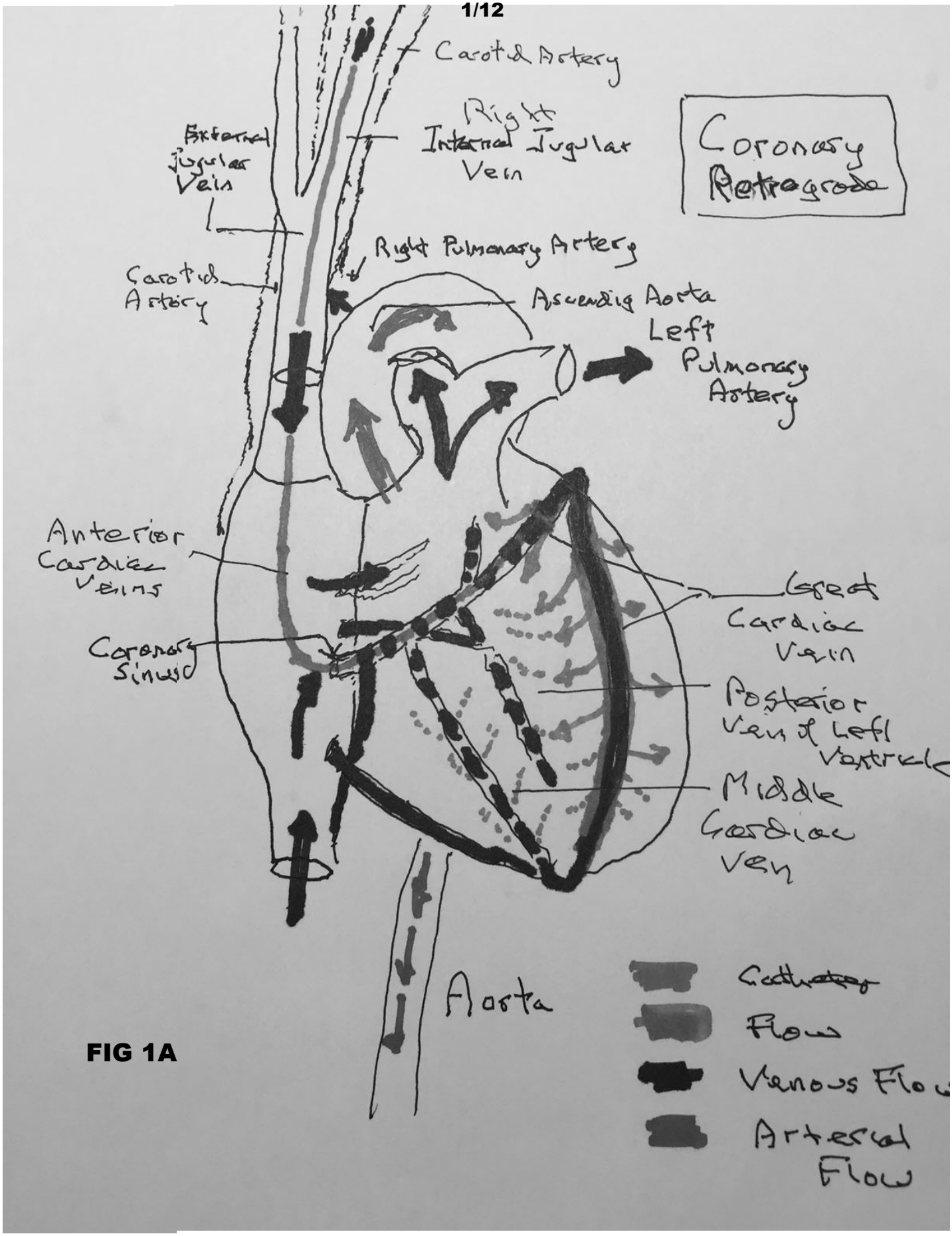

Carotid Artery
Right Internal Jugular Vein
External Jugular Veins
Coronary Retrograde
Right Pulmonary Artery
Carotid Artery
Ascending Aorta
Left Pulmonary Artery
Anterior Cardiac Veins
Great Cardiac Vein
Coronary Sinus
Posterior Vein of Left Ventricle
Middle Cardiac Vein
Aorta
Catheter
Flow
Venous Flow
Arterial Flow

FIG 1A

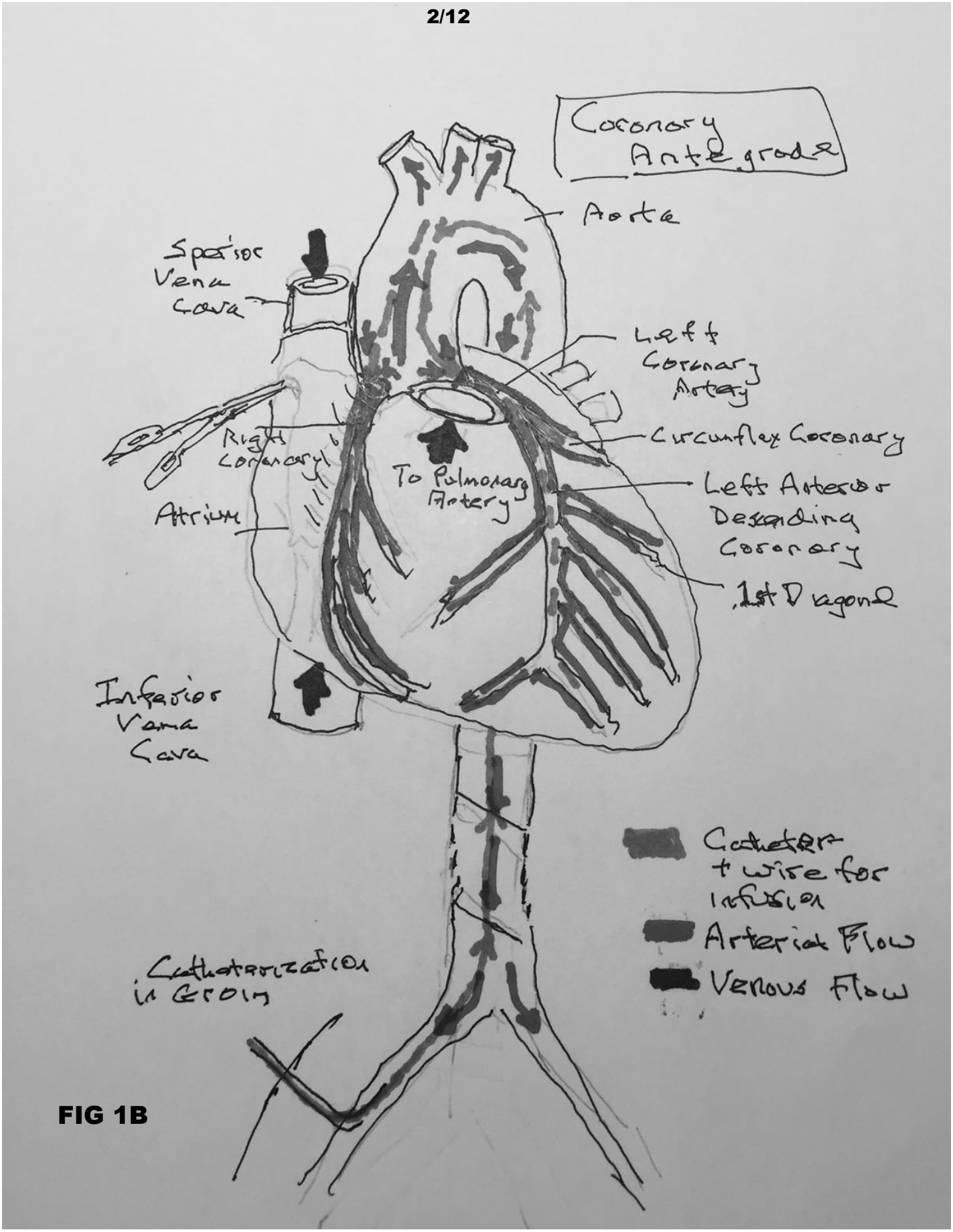

Coronary Antegrade
Aorta
Superior Vena Cava
Left Coronary Artery
Circumflex Coronary
Right Coronary
To Pulmonary Artery
Left Anterior Descending Coronary
Atrium
1st Diagonal
Inferior Vena Cava
Catheter + wire for infusion
Arterial Flow
Venous Flow
Catheterization in Groin

FIG 1B

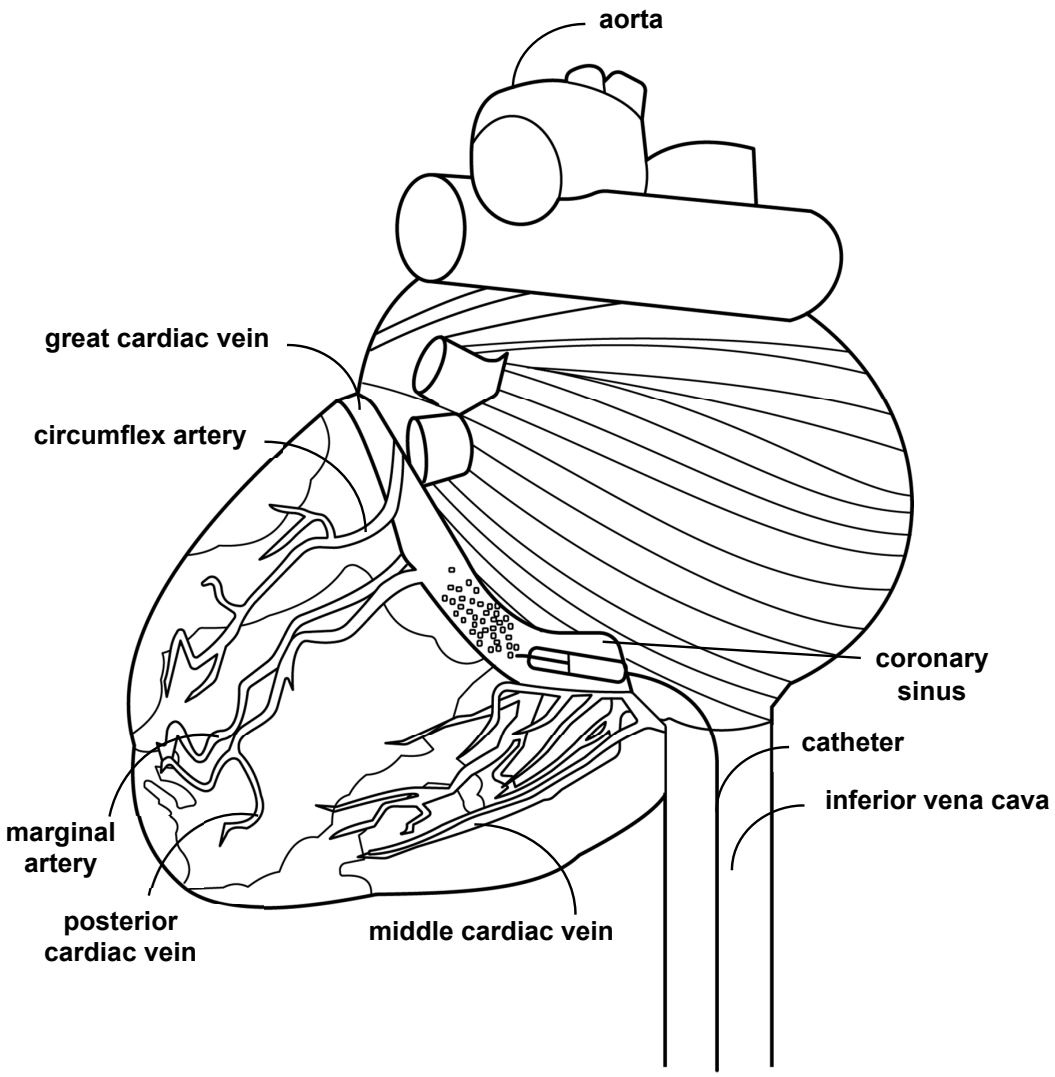

aorta
great cardiac vein
circumflex artery
coronary sinus
catheter
inferior vena cava
marginal artery
posterior cardiac vein
middle cardiac vein

FIG 1C

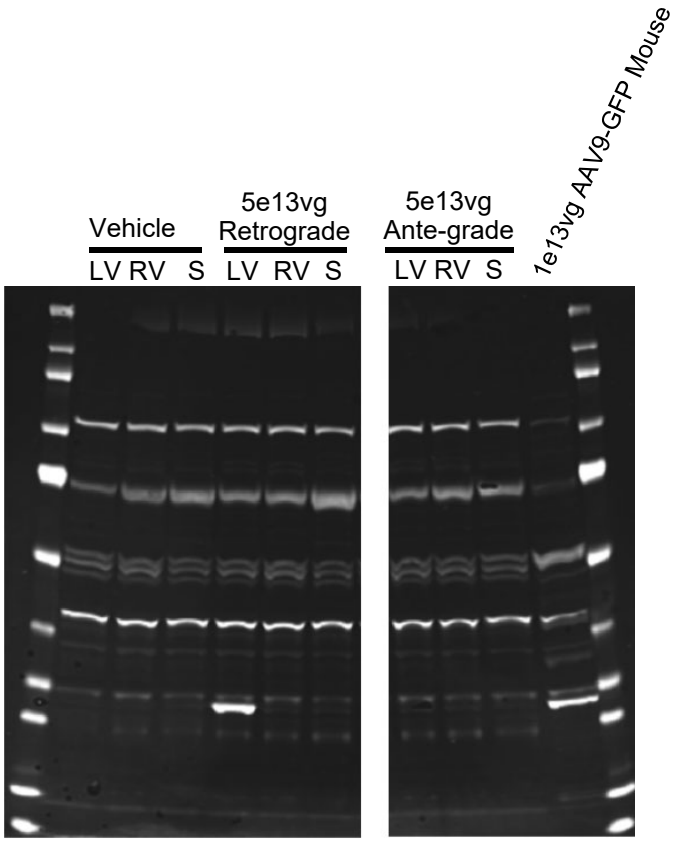

Vehicle
5e13vg
Retrograde
5e13vg
Ante-grade
1e13vg AAV9-GFP Mouse
LV RV S
LV RV S
LV RV S

FIG 2

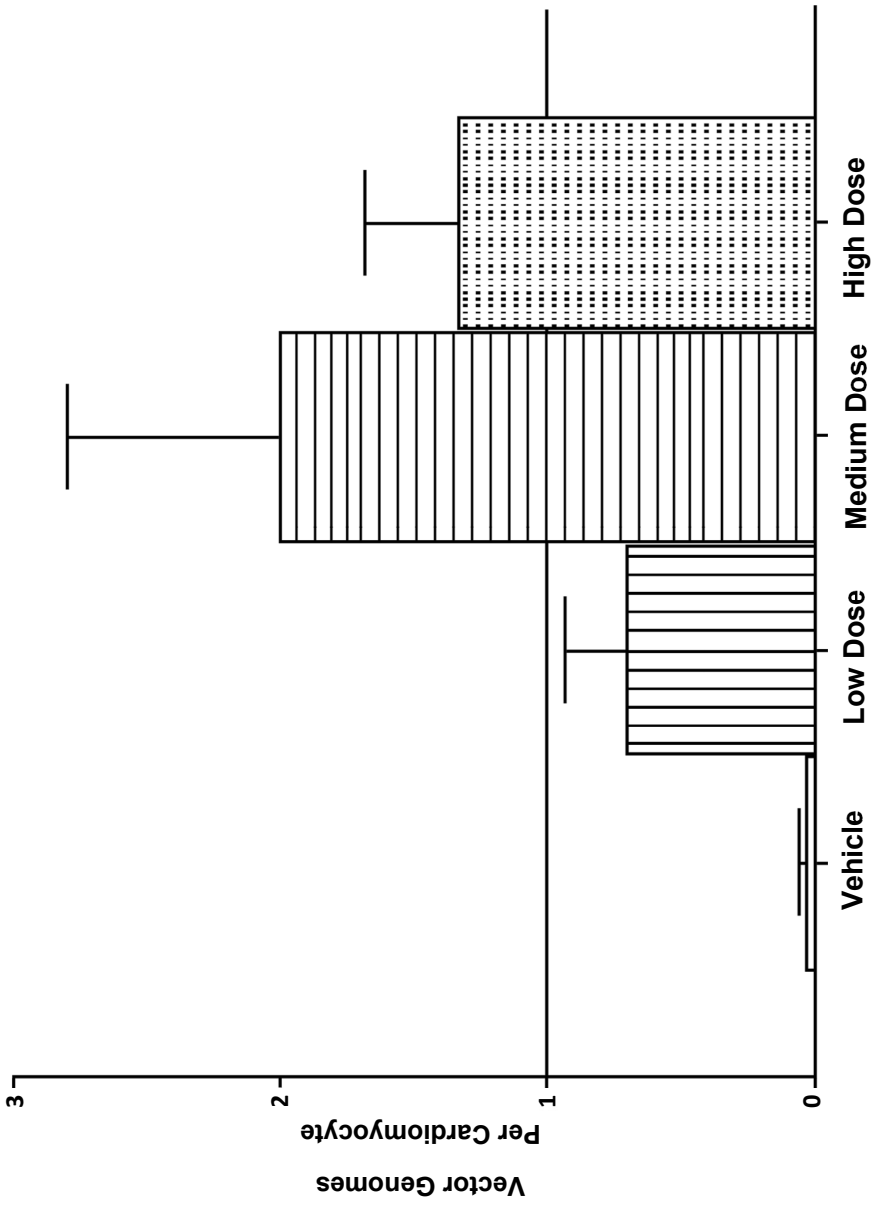
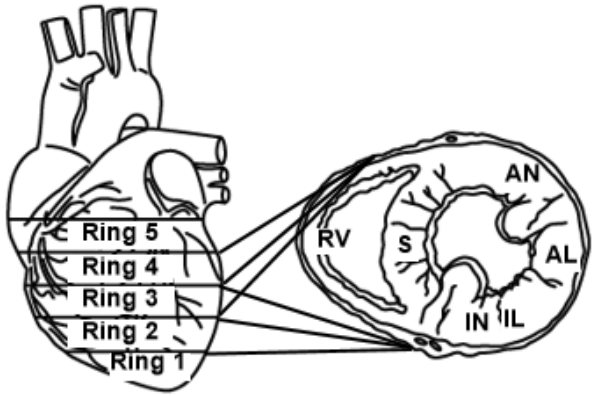

Vector Genomes
Per Cardiomyocyte
0
1
2
3
Vehicle
Low Dose
Medium Dose
High Dose

FIG 3

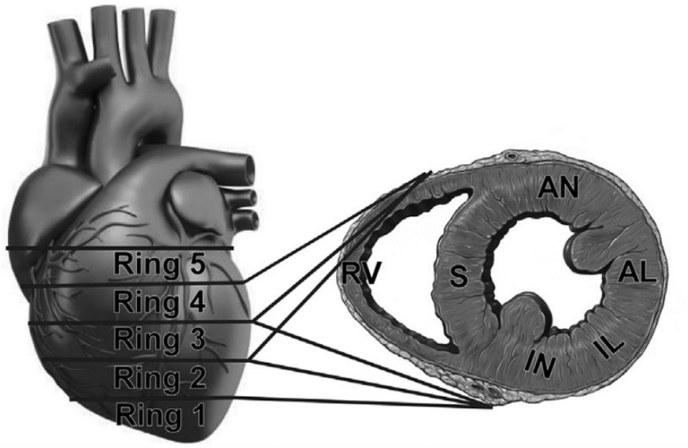


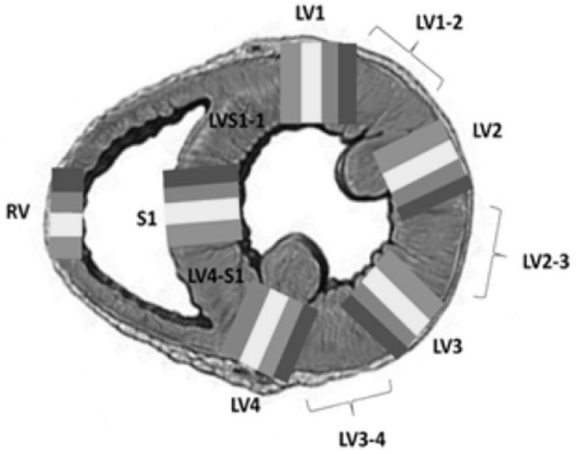
Location	Vehicle			5e13vg/animal			1e14vg/animal			2.5e14vg/animal		
	Vg/myocyte	*SEM*	*N*	*Vg/myocyte*	*SEM*	*N*	*Vg/myocyte*	*SEM*	*N*	*Vg/myocyte*	*SEM*	*N*
Ring 2												
AN	0.0	0	1	0.3	0.2	4	0.9	0.3	2	1.4	0	1
AL	0.0	0	1	0.1	0.0	4	0.1	0.0	2	0.6	0	1
IL	0.0	0	1	0.5	0.3	4	1.8	1.4	2	0.7	0	1
IN	0.0	0	1	0.3	0.1	4	0.4	0.1	2	6.6	0	1
S	0.0	0	1	0.1	0.1	3	1.4	1.1	2	1.5	0	1
RV	0.0	0	1	0.5	0.3	4	0.8	0.5	2	0.7	0	1
Ring 3												
AN	0	0	1	0.2	0.1	4	12.8	12.0	2	0.9	0	1
AL	0.0	0	1	0.1	0.0	4	1.4	0.8	2	1.3	0	1
IL	0.0	0	1	0.3	0.2	4	4.0	3.6	2	1.4	0	1
IN	0.0	0	1	4.1	2.4	4	0.6	0.2	2	1.5	0	1
S	0.0	0	1	0.2	0.1	4	0.6	0.2	2	0.9	0	1
RV	0.0	0	1	1.0	0.7	4	0.3	0.2	2	-	0	0
Ring 4												
AN	0.3	0	1	0.2	0.1	4	1.0	0.1	2	1.0	0	1
AL	0.0	0	1	0.3	0.1	4	0.4	0.2	2	0.4	0	1
IL	0.1	0	1	3.7	3.2	4	10.8	10.0	2	1.0	0	1
IN	0.0	0	1	0.5	0.3	3	0.8	0.0	1	0.7	0	1
S	0.0	0	1	1.6	1.4	4	1.1	0.0	2	0.9	0	1
RV	0.0	0	1	0.2	0.1	4	0.5	0.1	2	1.3	0	1

Anterior, AL=Anterolateral, IL=Inferolateral, IN=Inferior, S=Septum, RV=Right Ventricle0

FIG 4

Figure 5


Ring 5
Ring 4
Ring 3
Ring 2
Ring 1
RV
S
AN
AL
IN
IL


LV1
LV1-2
LVS1-1
LV2
RV
S1
LV2-3
LV4-S1
LV3
LV4
LV3-4

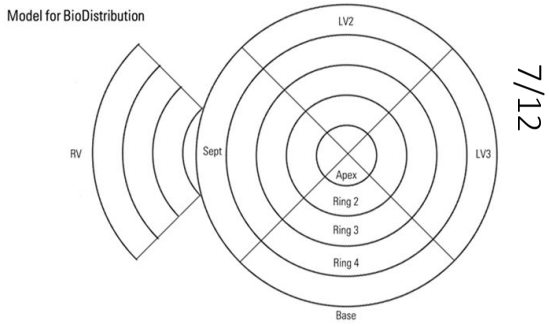

Model for BioDistribution
LV2
RV
Sept
LV3
Apex
Ring 2
Ring 3
Ring 4
Base

Figure 6

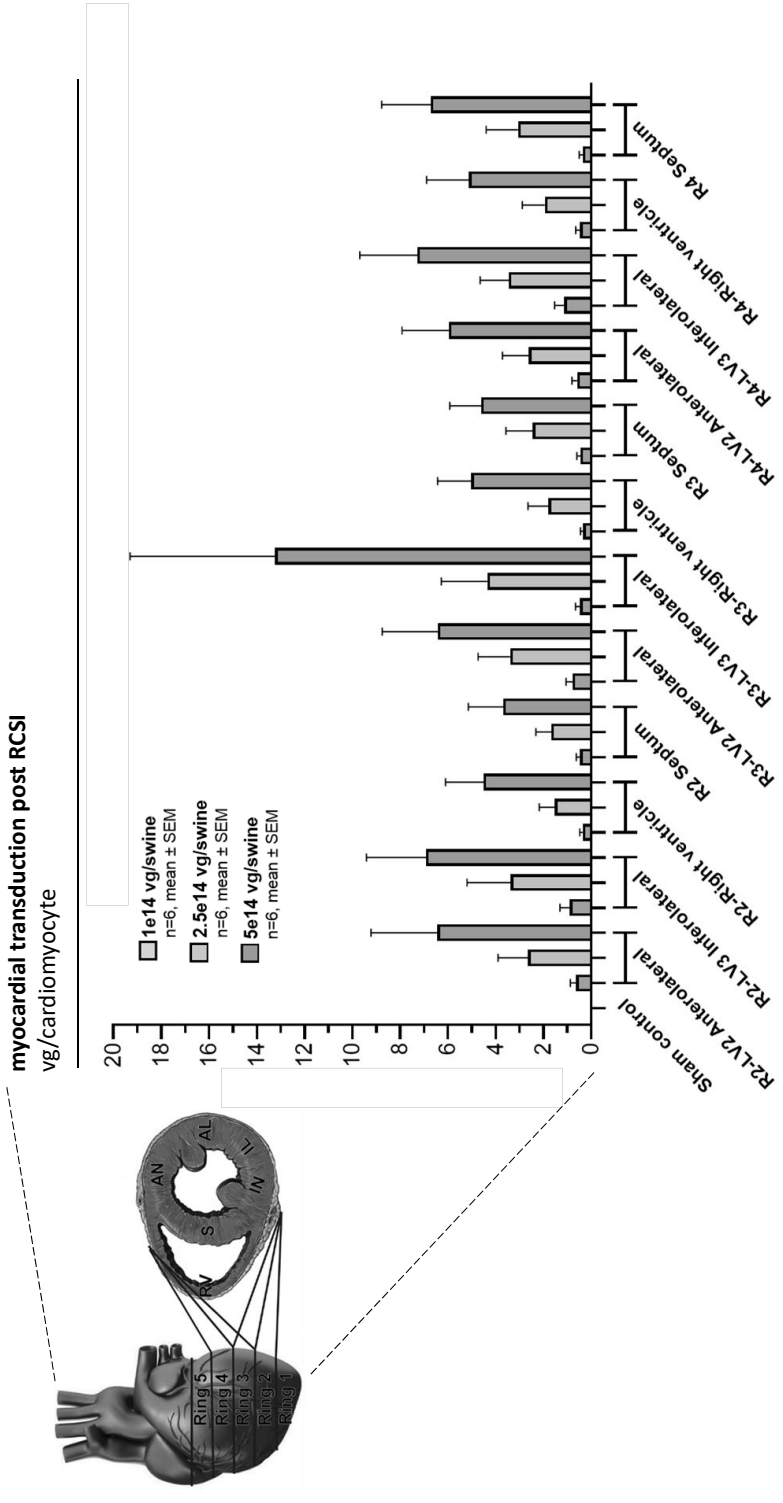

myocardial transduction post RCSI
vg/cardiomyocyte
1e14 vg/swine
n=6, mean ± SEM
2.5e14 vg/swine
n=6, mean ± SEM
5e14 vg/swine
n=6, mean ± SEM
0
2
4
6
8
10
12
14
16
18
20
Sham control
R2-LV2 Anterolateral
R2-LV3 Interolateral
R2-Right ventricle
R2 Septum
R3-LV2 Anterolateral
R3-LV3 Interolateral
R3-Right ventricle
R3 Septum
R4-LV2 Anterolateral
R4-LV3 Interolateral
R4-Right ventricle
R4 Septum
Ring 5
Ring 4
Ring 3
Ring 2
Ring 1
AN
AL
S
IL
IN
RV

Figure 7

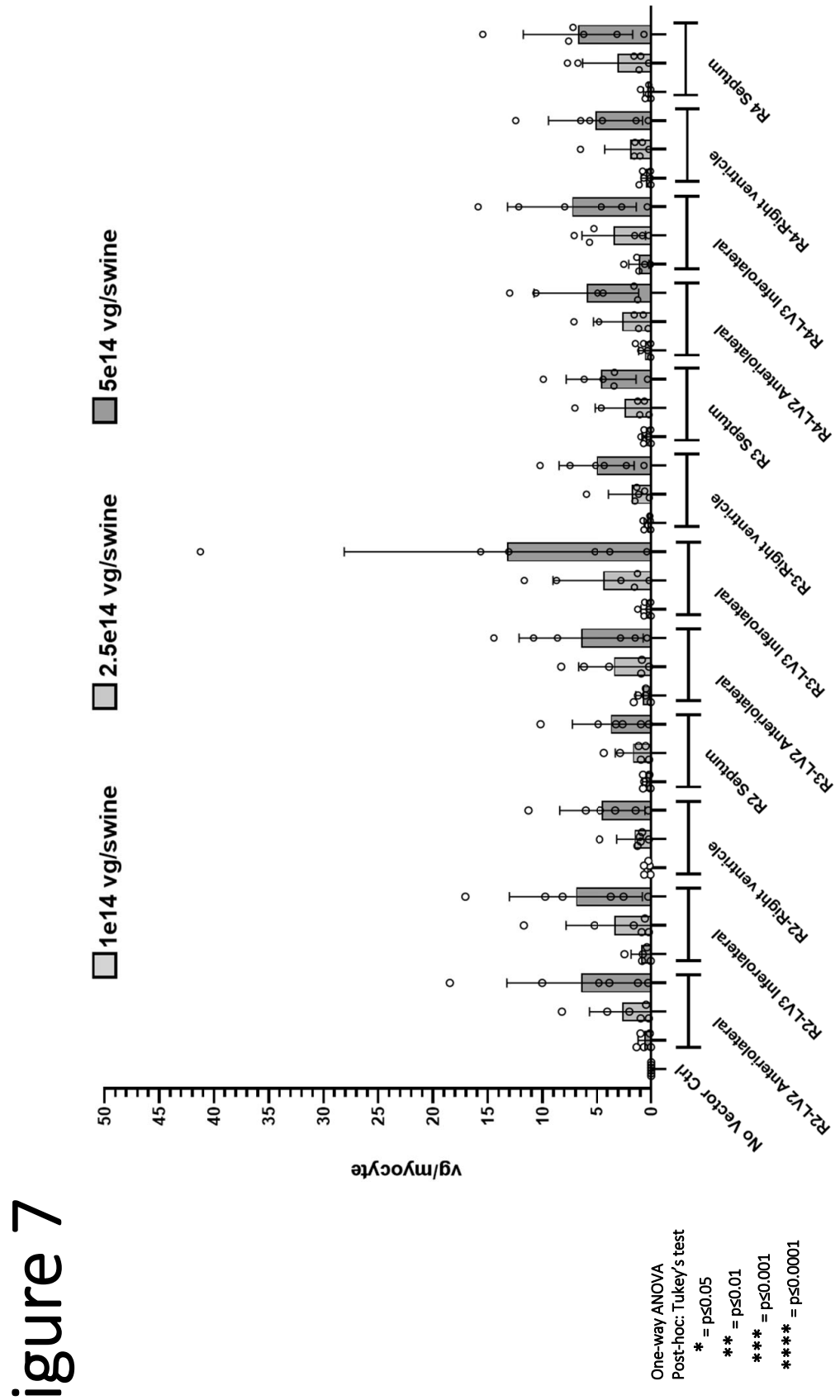
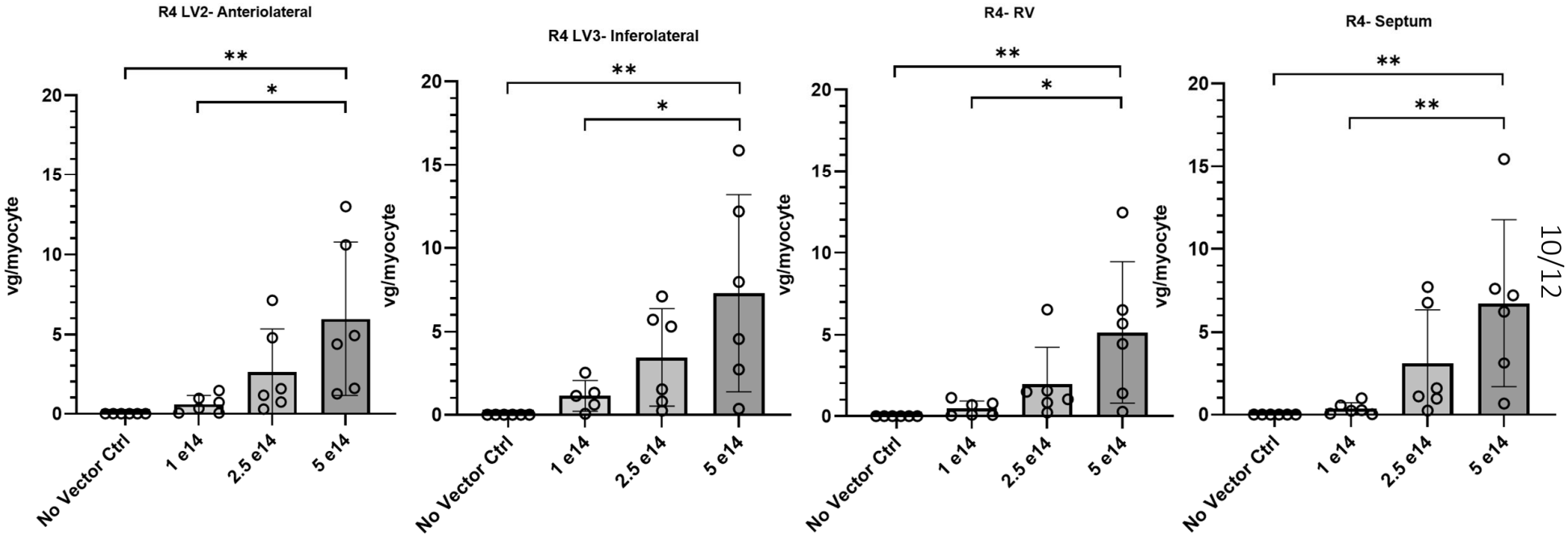
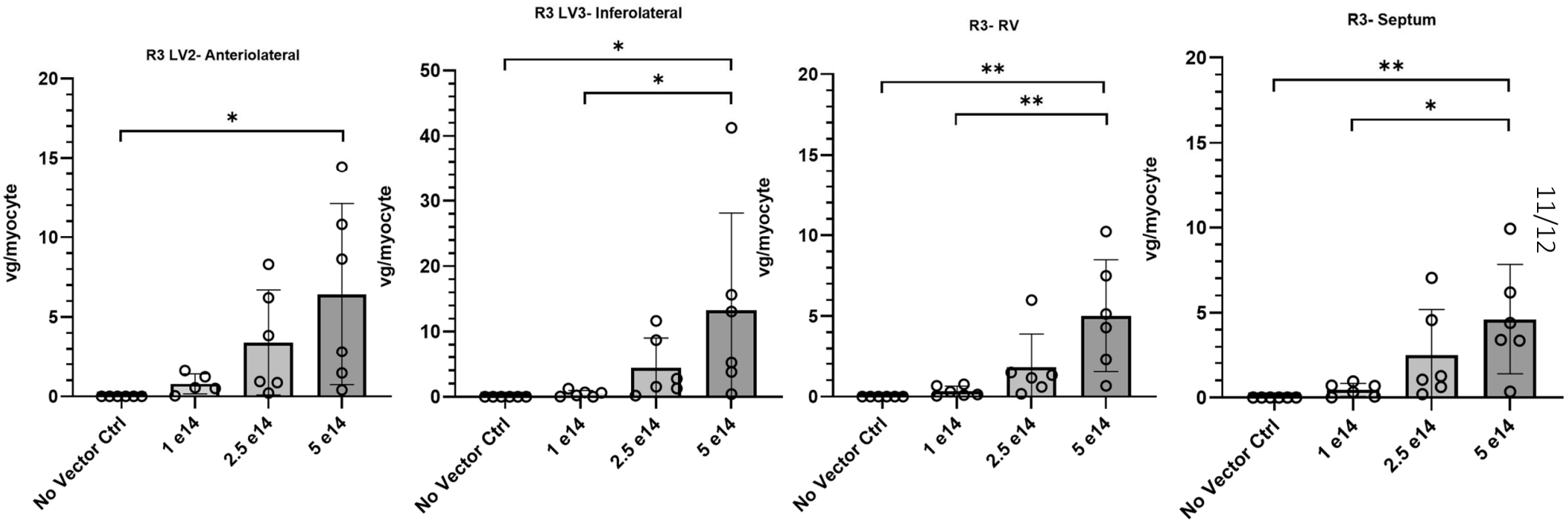

1e14 vg/swine
2.5e14 vg/swine
5e14 vg/swine
vg/myocyte
50
45
40
35
30
25
20
15
10
5
0
No Vector Ctrl
R2-L-V2 Anteriolateral
R2-L-V3 Interolateral
R2-Right ventricle
R2 Septum
R3-L-V2 Anteriolateral
R3-L-V3 Interolateral
R3-Right ventricle
R3 Septum
R4-L-V2 Anteriolateral
R4-L-V3 Interolateral
R4-Right ventricle
R4 Septum
One-way ANOVA
Post-hoc: Tukey's test
* = p≤0.05
** = p≤0.01
*** = p≤0.001
**** = p≤0.0001

Figure 8A



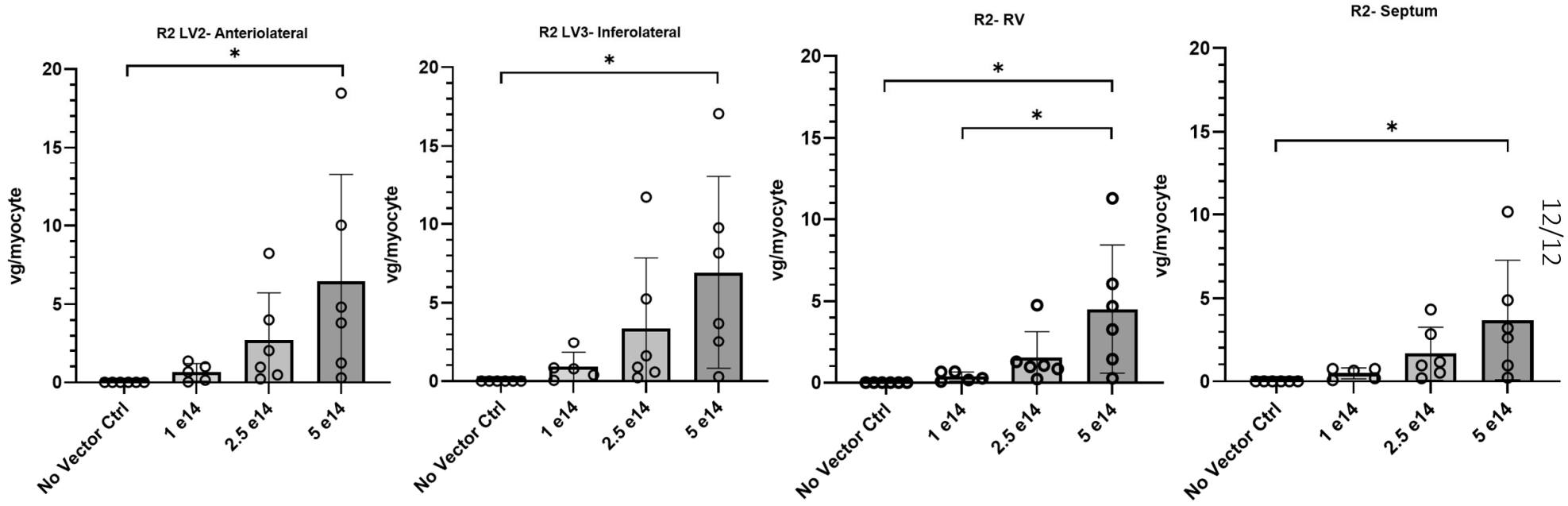
One-way ANOVA
Post-hoc: Tukey's test
* = p≤0.05
** = p≤0.01
*** = p≤0.001
**** = p≤0.0001

Figure 8B



One-way ANOVA
Post-hoc: Tukey's test
* = p≤0.05
** = p≤0.01
*** = p≤0.001
**** = p≤0.0001

Figure 8C



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One-way ANOVA
Post-hoc: Tukey's test
* = p≤0.05
** = p≤0.01
*** = p≤0.001
**** = p≤0.0001