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Supplemental Figure 1: In vitro Characterization of Hydrogel

(A) At 4^{o}C, hydrogel with 1α,25$(OH)_2D_3$ (vehicle) or hydrogel+ PLGA nanoparticles (1,25 NP) are in suspension form change position with gravity and (B) After incubation at 37^{o}C for 15 min, both (vehicle and 1,2NP) are in gel form and fail to change position with gravity.

Supplemental Figure 2: Schematic Representation of Pig AVF Model and Study Design

(A) Schematic representation of Chronic Kidney Disease (CKD) creation in Pig. Renal artery embolization was used to induce CKD. (B) Schematic representation of arteriovenous fistula (AVF) creation in pig after 28 days of renal artery embolization. An end-to-side JV to CCA anastomosis was created. 1,25NP with hydrogel was delivered to adventitia layer immediately after creation. (C) The scheme of study design. One group of animals was sacrificed 3 days after AVF creation (PCR group). The other group of animals was sacrificed 28 days after AVF creation (IHC group). Both group of animals either received hydrogel with PLGA without 1α,25$(OH)_2D_3$ (Vehicle) or hydrogel with PLGA and 1α,25$(OH)_2D_3$ (1,25NP). RRA, right renal artery; LRA, left renal artery; CCA, common carotid artery; GV, outflow vein; LEJV, Left external jugular vein; LCCA, left common carotid artery; CV, contralateral vein; MRI, magnetic resonance imaging; US, ultrasound.

Supplemental Figure 3: Drug Delivery and Measurement of 1α,25$(OH)_2D_3$ Concentration in Serum and Outflow vein after Delivery of Drug

(A) Representative intraoperative image of 1,25 NP or vehicle layering to the adventitia layer of outflow vein for the 4 cm length from the anastomosis immediately after AVF creation. (B) Outflow vein diameter was used to calculate the surface area before delivering the 1,25 NP or vehicle. There was no significant difference in the outflow vein diameter between 1,25 NP and vehicle group. (C) There was no significant difference in the amount of calcitriol delivered between day 3 and day 28 group. (D) Serum $1\alpha,25(OH)_2D_3$ level of animals were measured by mass spectrometry on day of AVF creation and at day 3, day 7, day 14 and day 28 after AVF. At day 3 after AVF, $1\alpha,25(OH)_2D_3$ level decreased significantly in 1,25 NP group compared to vehicle group with no significant differences at any other time point between the two groups. (E) $1,25(OH)_2D_3$ concentration in the outflow vein of animals was measured at day 3 and day 28 after AVF. The average $1\alpha,25(OH)_2D_3$ concentration in outflow vein of 1,25 NP treated animals at day 3 was 19 ± 3.46 pg. There was undetectable $1\alpha,25(OH)_2D_3$ levels (<8pg) in the outflow vein at day 3 in the vehicle group. At day 28 after AVF, $1\alpha,25(OH)_2D_3$ concentration was undetectable (<8pg) in the outflow vein in both the groups. Each bar represents mean ± SEM of n≥3**.** Two-way ANOVA was performed. **P < 0.01, NS: not significant.

Supplemental Figure 4: Immunohistochemical Staining of IER3, Masson's trichrome, and Picrosirus Red Staining

(A-C) Semiquantitative analysis shows reduction in IER (+) cells in 1,25 NP group compared with vehicle group (intima, media and adventitia) of vessel. (D) Semiquantitative analysis of collagen by picrosirus red staining shows no significant change in the intima layer of vessel. (E-F) Semiquantitative analysis of collagen by picrosirus red staining shows a significant reduction

in the media and adventitia layer of vessel in 1,25 NP group compared with vehicle group. (G) Semiquantitative analysis of collagen by Masson's trichrome staining shows no significant change in the intima layer of vessel. (H-I) Semiquantitative analysis of collagen by Masson's trichrome staining shows a significant reduction in the media and adventitia layer of vessel in 1,25 NP group compared with vehicle group. Each bar represents mean ± SEM of n≥4. Non-parametric Mann-Whitney test was performed. *P < 0.05, **P < 0.01, NS: not significant.

Figure 5: Immunohistochemical Staining for α-SMA, Desmin, Vimentin and FSP-1

(A) Staining for α-SMA, desmin, vimentin, and FSP-1 on day 28 after AVF creation of outflow vein from vehicle group. The first column is the IgG antibody negative control. α-SMA, desmin, vimentin, and FSP-1 (+) cells have brown staining (Black arrows). Images were captured at 40X magnification. Right panel shows enlarged view of (+) cells across three different layers (400 X magnifications). (B) Staining for α-SMA, Desmin, Vimentin and FSP-1 on day 28 after AVF creation of outflow vein from 1,25 NP group. (C) Semiquantitative analysis shows reduction in α-SMA (+) cells in 1,25 NP group compared with vehicle group. (D) The Semiquantitative analysis shows reduction in desmin positive cells in 1,25 NP group compared with vehicle group. (E) Semiquantitative analysis shows no significant change in vimentin (+) cells in 1,25 NP group compared with the vehicle group. (F) Semiquantitative analysis shows a significant reduction in FSP-1 (+) cells in 1,25 NP group compared with vehicle group. Each bar represents mean ± SEM of n≥4. Non-parametric Mann-Whitney test was performed. **P < 0.01. L: lumen, Ad: adventitia, M: media, and I: intima. Scale bar is 500μm and 50μm (panel inset).

Supplemental Figure 6: Immunohistochemical Staining for MCP-1 and CD68

(A) Staining for MCP-1 and CD68 on day 28 after AVF creation of outflow vein from 1,25 NP and vehicle group. The first column is the IgG antibody negative control. MCP-1 and CD68 (+) cells have brown staining. Images were captured at 40X magnification. Right panel shows enlarged view of (+) cells across three different layers (400X magnification). (B) Staining for MCP-1 and CD68 on day 28 after AVF creation of outflow vein from 1,25 NP group. The first column is IgG antibody negative control. MCP-1 and CD68 positive cells have brown staining (Black arrows). (C) Semiquantitative analysis shows reduction in MCP-1 (+) cells in 1,25 NP group compared with vehicle group. (D) Semiquantitative analysis shows reduction in CD68 (+) cells in 1,25 NP group compared with vehicle group. Each bar represents mean ± SEM of $n \geq 3$. Non-parametric Mann-Whitney test was performed. *$P < 0.05$, **$P < 0.01$. L: lumen, Ad: adventitia, M: media, and I: intima. Scale bar is 500μm and 50μm (panel inset).

Supplemental Figure 7: Assessment of Cell Apoptosis and Proliferation in the AVF outflow vein

Cell death and cell proliferation was assessed using TUNEL and Ki-67 staining, respectively on outflow vein from vehicle and 1,25 NP group. (A) Staining for TUNEL and Ki-67 on day 28 after AVF creation of outflow vein from vehicle group. The first column is the TUNEL negative control. Dark brown nuclei are positive for TUNEL and brown nuclei are positive for Ki-67 (red arrows). Images were captured at 40X magnification. Right panel shows enlarged view of (+) cells from three different layers (400X magnification). (B) Staining for TUNEL and Ki-67 on day 28 after AVF creation of outflow vein from 1,25 NP group. (C) Semiquantitative analysis shows reduction in TUNEL (+) cells in 1,25 NP group compared with vehicle group. (D) Semiquantitative analysis shows reduction in Ki-67 (+) cells in 1,25 NP group compared with

vehicle group. Each bar represents mean ± SEM of n≥4. Non-parametric Mann-Whitney test was performed. *P < 0.05, **P < 0.01. L: lumen, Ad: adventitia, M: media, and I: intima. Scale bar is 500µm and 50µm (panel inset).

Supplemental Figure 8: Carstairs and Alizarin-Red S Staining

Thrombotic component in the tissue sections of AVF outflow veins were assessed by carstairs staining after 28 days of AVF creation. Carstairs staining distinguish platelets (navy blue), fibrin (bright red), collagen (bright blue), muscle (red) and red blood cells (yellow). To measure Calcium deposition, tissue sections of AVF outflow veins were stained with Alizarin Red S stain. Calcium forms an Alizarin Red S- calcium complex which gives orange red color. (A) Carstairs and Alizarin-Red S red staining on day 28 post AVF creation of outflow vein from vehicle group. Images were captured at 40X magnification. Right panel shows enlarged view of positive cells across three different layers (400X magnification). (B) Carstairs and Alizarin-Red S red staining on day 28 post AVF creation of outflow vein from 1,25 NP group shows no thrombosis and calcium deposition. L: lumen, Ad: adventitia, M: media, and I: intima. Scale bar is 500µm and 50µm (panel inset).

Supplemental Table 1 - Amount of Drug Delivery

Group	Day	Pig ID	GA (mm)	GV (mm)	PLGA or Drug amount (µl)	Amount of $1\alpha,25(OH)_2D_3$ delivered (µg)
Vehicle	Day 3	17P630	1.5	3	250.00	ND
	Day 3	17P631	4	10	832.00	ND
	Day 3	17P634	4	8	666.67	ND
	Day 3	17P633	6	11	920.00	ND
	Day 3	17P635	4	9	750.00	ND
	Day 28	17P704	4	10	832.00	ND
	Day 28	17P710	3	6	500.00	ND
	Day 28	17P699	5	10	832.00	ND
	Day 28	17P678	2	8	666.67	ND
	Day 28	17P674	3	9	750.00	ND
1,25 NP	Day 3	17P649	4	8	666.67	27.78
	Day 3	17P654	4	9	750.00	31.25
	Day 3	17P648	3	8	666.67	27.78
	Day 3	17P650	3	7	583.00	24.29
	Day 3	17P661	3	6	500.00	20.83
	Day 3	17P657	3	7	583.00	24.29
	Day 28	17P651	4	8	666.67	27.78
	Day 28	17P662	4	9	750.00	31.25
	Day 28	17P656	5	10	832.00	34.66
	Day 28	17P663	3	8	666.67	27.78
	Day 28	17P765	3	9	750.00	31.25
	Day 28	17P848	4	11	933.00	38.87
	Day 28	17P847	5	10	832.00	34.66
	Day 28	17P184	3	8	666.67	27.78
	Day 28	17P185	3	8	666.67	27.78

Supplemental Table 2 - List of primers used for gene expression analysis

Gene	Forward Primer	Reverse Primer
TBP-1	5’-GATGGACGTTCGGTTTAGG-3’	5’-AGCAGCACAGTACGAGCAA-3’
IER3	5’-CGAGTGGTCCGGCGCCA-3’	5’-CGACACACCCTCTTCAGCCA-3’

Supplemental Table 3 - List of antibodies used for IHC in the present study

Antibody	Catalog number	Supplier	Dilution
CD-68	ab-125212	Abcam	1:250
FSP-1	07/2274	Millipore Sigma	1:1000
α-SMA	ab- 5694	Abcam	1:1000
CD-31	ab- 28364	Abcam	1:1000
MCP-1	ab- 25154	Abcam	1:1000
Desmin	ab- 32362	Abcam	1:2000
Hif-1α	ab- 2185	Abcam	1:200
Ki-67	ab- 9260	Abcam	1:200
IER3	ab- 65152	Abcam	1:150
VEGF-A	ab- 46154	Abcam	1:800
Vimentin	ab- 8978	Abcam	1:250

Supplemental Table 4 – Serum Blood Urea Nitrogen (BUN)

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D14	D21	D28
Vehicle	Day 3	17P630		2.3	2.4			
	Day 3	17P631		3.6	3.7			
	Day 3	17P634	2.1	2.6	1.8			
	Day 3	17P633	2.9	2.7	1.8			
	Day 3	17P635	3.2	1.8	2.2			
	Day 28	17P704	1.4	2.8	2.8	3.7	3.9	3
	Day 28	17P710	1.6	3.9	1.9	2.9	4.2	3
	Day 28	17P699	2.8	5.1	4.6	4	4.8	3.2
	Day 28	17P678	1.6	2.6	2.2	3.7	4.7	2
	Day 28	17P674	1.8	4	4.1	3.2	6.1	4.6
1,25 NP	Day 3	17P649	1.9	2.2	2.8			
	Day 3	17P654	1.8	3.4	3.3			
	Day 3	17P648	1.3	2.5	2.5			
	Day 3	17P650	2.8	2.3	2.5			
	Day 3	17P661	1.8	1.7	3.3			
	Day 3	17P657	1.9	1.7	3			
	Day 28	17P651	2.5	2.9		2.4	2.8	2.5
	Day 28	17P662	2	2.1		2		1.7
	Day 28	17P656	1.4	1.4	2.4	1.7	2.1	3.2
	Day 28	17P663	1.2	2.1	2.2	2.2	2.5	3.8
	Day 28	17P765	1.2	0.9	1.1	1.1	1.3	3
	Day 28	17P848	2.2	1.7	3.3	2.1	3.6	2.7
	Day 28	17P847	1.1	1.7	2	0.9	4.4	
	Day 28	17P184	1	2.2	5.1	2.9	1.7	2.3
	Day 28	17P185	1.4	6.1	11.7	6.9	6.6	6.3

Supplemental Table 5 – Serum Creatinine (µmol/L) Reference Interval 70-168 µmol/L

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630		172	157				
	Day 3	17P631		195	152				
	Day 3	17P634	103	146	151				
	Day 3	17P633	180	166	166				
	Day 3	17P635	144	139	131				
	Day 28	17P704	116	232	227	216	281	190	203
	Day 28	17P710	112	150	132	140	143	164	159
	Day 28	17P699	138	197	190	220	230	198	162
	Day 28	17P678	107	188	154	138	161	165	159
	Day 28	17P674	113	197	165	174	168	184	192
1,25 NP	Day 3	17P649	128	145	158				
	Day 3	17P654	112	177	150				
	Day 3	17P648	126	166	126				
	Day 3	17P650	114	148	148				
	Day 3	17P661	165	85	128				
	Day 3	17P657	113	143	144				
	Day 28	17P651	142	136		130	134	129	128
	Day 28	17P662	136	199			183		155
	Day 28	17P656	84	123	122	117	144	146	151
	Day 28	17P663	113	157	151	168	206	173	174
	Day 28	17P765	83	102	110		102	95	111
	Day 28	17P848	95	124	137	115	178	146	170
	Day 28	17P847	84	168	170		68	148	
	Day 28	17P184	102	160	133	144	153	171	169
	Day 28	17P185	98	340	297	290	307	310	281

Supplemental Table 6 - Serum Calcium (mg/dL) Reference Interval 10.0-11.3 mg/dL

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630			10.8				
	Day 3	17P631			10.3				
	Day 3	17P634		10.1	10.1				
	Day 3	17P633		10.5	10.6				
	Day 3	17P635		10.5	10				
	Day 28	17P704	11.1	10.7	9.8	10.5	9.9	10	9.6
	Day 28	17P710	10.7	11.4	10.6	10.8	10.4	11.2	10.8
	Day 28	17P699	11	11.2	10.8	11	11	10.4	10.9
	Day 28	17P678	10.7	11.1	10.8	10.9	10.7	9.9	10.2
	Day 28	17P674	10.8	10.2	10.2	11.2	10.3	10.7	10.3
1,25 NP	Day 3	17P649	11.3	10.9	11				
	Day 3	17P654		11.3	11.4				
	Day 3	17P648		10.7	12.8				
	Day 3	17P650		10.7	12.8				
	Day 3	17P661		10.9	11.7				
	Day 3	17P657		10.9	11.5				
	Day 28	17P651		10.7		10.6	10.6	10.7	10.6
	Day 28	17P662		10.5			9.9		10
	Day 28	17P656	10.4	10.2	12.8	11.1	10.7	10.3	10.7
	Day 28	17P663	9.4	10.4	11.2	10.9	10.8	10.2	10.3
	Day 28	17P765	11.2	10.4	10.3		10.8	9.7	9.9
	Day 28	17P848	11.4	11	11.3	10.4	11.1	10.1	11.3
	Day 28	17P847	10.6	10.8	11.4			10.9	9.2
	Day 28	17P184	11.4	11	12.1	10.4	11.2	10.7	10.8
	Day 28	17P185	11.6	11.3	11.7	10.7	11	10.5	10.5

Supplemental Table 7 - Serum Phosphate (mg/dL) Reference Interval 5.8-7.8 mg/dL

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630			8.5				
	Day 3	17P631			6.5				
	Day 3	17P634		6.8	6.7				
	Day 3	17P633		6.1	6.6				
	Day 3	17P635		7.1	6.3				
	Day 28	17P704	6.9	7.4		10	6.6	7.3	7.6
	Day 28	17P710	6.8	7.1	6.7	9	6.3	8.9	6.4
	Day 28	17P699	7.8	8	7.4	10.1	7.7	6.8	6.6
	Day 28	17P678	7.3	6.8	7.4	8.3	7.2	8.7	7.5
	Day 28	17P674	7.6	6.1	6	9.5	7.1	7.4	10
1,25 NP	Day 3	17P649	7.7	6.9	7				
	Day 3	17P654		7.5	6.7				
	Day 3	17P648		8.2	7.7				
	Day 3	17P650		7.8	7.4				
	Day 3	17P661		7.2	7				
	Day 3	17P657			7.2				
	Day 28	17P651		7.5		8	7.3	8.8	7.3
	Day 28	17P662		6.5			5.9		6.5
	Day 28	17P656	6.7	7.2	5.9	6.9	7.6	8	6.9
	Day 28	17P663	6.2	7.2	5.7	8.9	7.1	6.5	6.8
	Day 28	17P765	8.58				7.5	7.5	7.2
	Day 28	17P848	6.8	7	8	7.7	6.3	8.4	6.5
	Day 28	17P847	8.1	7.4	6.7		7.5	6.5	
	Day 28	17P184	10.4	7.9	8.2	6	8.1	7.7	8.2
	Day 28	17P185	8.9	7	10.6	6.1	7.7	6.9	7.3

Supplemental Table 8 - Serum Potassium (mmol/L) Reference Interval 3.9-5.6 mmol/L

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630			7.6				
	Day 3	17P631			6.3				
	Day 3	17P634		4.4	8.3				
	Day 3	17P633		4.1	6.9				
	Day 3	17P635		4.4	5.3				
	Day 28	17P704	4.8	5.2	6.8	6.7	6.3	5.3	7.1
	Day 28	17P710	6.1	6.2	5.1	6.8	5.3	7.1	6.8
	Day 28	17P699	5.8	6.2	6.2	7.6	5.4	5	7.1
	Day 28	17P678	6.9	6.8	5.8	7.5	5.2	6.1	7.1
	Day 28	17P674	6.6	7.2	5.7	8.5	8.5	7.6	7.4
1,25 NP	Day 3	17P649	5.4	4.8	5.2				
	Day 3	17P654		5	5.7				
	Day 3	17P648		7	6.8				
	Day 3	17P650		6.8	7.1				
	Day 3	17P661		5	5.4				
	Day 3	17P657		5.3	5.7				
	Day 28	17P651		4.7		5.4	5.2	6.6	5
	Day 28	17P662		4.6			4.9		4.5
	Day 28	17P656	5.9	4.8	6.6	7.1	7.7	6.6	5.2
	Day 28	17P663	5.9	4.9	4.6	6.7	7	6.1	4.9
	Day 28	17P765	7.1	5.1	4.8		5.1	5	5.1
	Day 28	17P848	6.7	5.3	5.5	5	5.4	5.3	5.5
	Day 28	17P847	6.9	4.9	5.3		5	5.3	
	Day 28	17P184	7.3	4.9	5.7	4.6	7	5.2	5.2
	Day 28	17P185	7	5.1	6.2	5.4	7.3	5.3	5.3

Supplemental Table 9 - Serum Glucose (mg/dl) Reference Interval 48-290 mg/dL

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630		99	78				
	Day 3	17P631		88	98				
	Day 3	17P634	113	74	118				
	Day 3	17P633	124	95	116				
	Day 3	17P635	112	93	104				
	Day 28	17P704	152	86	93	84	93	97	71
	Day 28	17P710	139	109	99	109	85	100	83
	Day 28	17P699	62	81	98	96	74	81	93
	Day 28	17P678	81	90	105	76	77	88	91
	Day 28	17P674	81	99	104	84	103	85	99
1,25 NP	Day 3	17P649	131	123	119				
	Day 3	17P654	126	144	93				
	Day 3	17P648	147	96	106				
	Day 3	17P650	126	87	107				
	Day 3	17P661	133	78	87				
	Day 3	17P657	83	87	104				
	Day 28	17P651	181	115		87	110	76	113
	Day 28	17P662	187	96			109		101
	Day 28	17P656	74	82	97	72	84	89	98
	Day 28	17P663	86	85	107	92	119	80	99
	Day 28	17P765	96	89	108		97	101	114
	Day 28	17P848	83	95	101	113	104	101	103
	Day 28	17P847	95	77	101		91	101	
	Day 28	17P184	134	99	108	97	119	108	105
	Day 28	17P185	160	116	128	170	142	88	106

Supplemental Table 10 - Serum Albumin (g/dL) Reference Interval 3.3-4.8 g/dL

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630			3.6				
	Day 3	17P631			3.9				
	Day 3	17P634		4.1	4.1				
	Day 3	17P633		3.6	3.2				
	Day 3	17P635		3.7	3.4				
	Day 28	17P704	3.3	3.2	3	3.4	3.5	3.3	3
	Day 28	17P710	3.2	3.6	3.6	3.8	3.3	3.9	3.7
	Day 28	17P699	3.8	2.5	2.9	3.2	2.9	3.1	3.7
	Day 28	17P678	3.6	3.2	2.9	3.3	3.3	3	3.4
	Day 28	17P674	3.6	3.6	3	3.6	3.5	3.7	3.6
1,25 NP	Day 3	17P649	3.7	3.7	3.7				
	Day 3	17P654		3.8	3.7				
	Day 3	17P648		3.9	3.5				
	Day 3	17P650		3.4	3.2				
	Day 3	17P661		2.6	2.7				
	Day 3	17P657		3.8	3.8				
	Day 28	17P651		3.8		3.7	3.7	3.6	3.4
	Day 28	17P662		3.9			3.7		3.4
	Day 28	17P656	3.8	3.6	3	3.2	3.3	3.2	3.9
	Day 28	17P663	3.3	3.1	2.7	3.1	3.2	3	3.4
	Day 28	17P765	3.9	3.1	3.2		3.6	3.2	3.1
	Day 28	17P848	3.4	2.9	3.1	3.2	3.4	3.6	3.8
	Day 28	17P847	3.8	3.4	3.5		3.7	1.9	
	Day 28	17P184	3.7	3.5	3.1	3.3	3.1	3.6	3.4
	Day 28	17P185	3.8	3.5	3.6	3.6	3.5	3.9	3.9

Supplemental Table 11 - Serum Total Carbon Dioxide (mol/L) Reference Interval: 26-35 mol/L

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630			33				
	Day 3	17P631			31				
	Day 3	17P634		31	31				
	Day 3	17P633		29	30				
	Day 3	17P635		30	31				
	Day 28	17P704	30	31	28	35	20	32	29
	Day 28	17P710	33	35	34	33	31	37	32
	Day 28	17P699	33	31	31	32	31	31	32
	Day 28	17P678	32	34	33	32	32	35	31
	Day 28	17P674	27	32	30	34	31	30	35
1,25 NP	Day 3	17P649	31	31	31				
	Day 3	17P654		34	31				
	Day 3	17P648		30	34				
	Day 3	17P650		32	32				
	Day 3	17P661		32	31				
	Day 3	17P657		33	33				
	Day 28	17P651		30		36	29	35	29
	Day 28	17P662		33			31		29
	Day 28	17P656	31	32	33	32	29	31	31
	Day 28	17P663	28	31	31	32	32	31	32
	Day 28	17P765	33	34	34		32	31	33
	Day 28	17P848	34	31			22	32	32
	Day 28	17P847	34	30	34		31	33	
	Day 28	17P184	31	33	33	31	30	32	31
	Day 28	17P185	30	29	33	28	31	29	33

Supplemental Table 12 - Serum Sodium (mmol/L) Reference Interval: 135-150 mmol/L

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630			142				
	Day 3	17P631			131				
	Day 3	17P634		126	129				
	Day 3	17P633		126	128				
	Day 3	17P635		132	130				
	Day 28	17P704	141	138	137	147	128	134	133
	Day 28	17P710	133	145	149	140	170	144	142
	Day 28	17P699	136	143	138	140	141	135	142
	Day 28	17P678	138	142	143	145	141	142	134
	Day 28	17P674	137	141	142	147	142	140	143
1,25 NP	Day 3	17P649	141	138	138				
	Day 3	17P654		139	140				
	Day 3	17P648		140	138				
	Day 3	17P650		138	139				
	Day 3	17P661		133	134				
	Day 3	17P657		137	141				
	Day 28	17P651		142		139	141	144	140
	Day 28	17P662		136			130		130
	Day 28	17P656	133	138	141	144	141	143	137
	Day 28	17P663	124	136	138	141	142	134	142
	Day 28	17P765	139	135	130		139	143	140
	Day 28	17P848	140	143					143
	Day 28	17P847	136	139	145		138	137	
	Day 28	17P184	141	135	142	129	139	135	135
	Day 28	17P185	146	135	146	138	138	143	140

Supplemental Table 13 – Serum Chloride (mmol/L) Reference Interval: 98-106 mmol/L

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D7	D14	D21	D28
Vehicle	Day 3	17P630			102				
	Day 3	17P631			91				
	Day 3	17P634		88	87				
	Day 3	17P633		83	89				
	Day 3	17P635		93	92				
	Day 28	17P704	102	98	96	99	86	91	92
	Day 28	17P710	95	104	101	94	121	101	100
	Day 28	17P699	94	99	98	100	100	98	101
	Day 28	17P678	99	98	98	96	100	96	86
	Day 28	17P674	100	97	111	92	94		
1,25 NP	Day 3	17P649	101	99	95	99			
	Day 3	17P654		95	100				
	Day 3	17P648		105	96				
	Day 3	17P650		97	100				
	Day 3	17P661		97	103				
	Day 3	17P657		100	101				
	Day 28	17P651		109		96	103	97	104
	Day 28	17P662		136			130		130
	Day 28	17P656	90	102	108	97	101	99	96
	Day 28	17P663	82	96	99	100	102	98	102
	Day 28	17P765	93	87	84		94	95	92
	Day 28	17P848	99	97					96
	Day 28	17P847	91	95	99			96	94
	Day 28	17P184	99	96	97	92	101	95	93
	Day 28	17P185	100	95	93	95	100	99	101

Supplemental Table 14 - Weight (kg) of animals

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D14	D28
Vehicle	Day 3	17P630	49.7	53	57		
	Day 3	17P631	48	52	59		
	Day 3	17P634		54	56		
	Day 3	17P633	47	58	58		
	Day 3	17P635	48	53	56		
	Day 28	17P704	58	62	64	66	74
	Day 28	17P710	47	51	53	57	59
	Day 28	17P699	52	60	60	60	63
	Day 28	17P678	50	55	57	57	
	Day 28	17P674	52	62	63	64	68
1,25 NP	Day 3	17P649	50	54	54		
	Day 3	17P654	48		52		
	Day 3	17P648	45	50	50		
	Day 3	17P650	45	52	54		
	Day 3	17P661	49	55	56		
	Day 3	17P657	49	55	56		
	Day 28	17P651	47	55	56	58	62
	Day 28	17P662	48	54	55	58	62
	Day 28	17P656	57.8	59	61	63	70
	Day 28	17P663	59	57	57	59	64
	Day 28	17P765	54	59	61	62	63
	Day 28	17P848	49	55	53	60	57
	Day 28	17P847	54	61	64	66	70
	Day 28	17P184	46	53	57	57	66
	Day 28	17P185	45	48	52	52	54

Supplemental Table 15 - Systolic Blood Pressure (mm Hg) of animals

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D14	D28
Vehicle	Day 3	17P630	124	89	123		
	Day 3	17P631	113	93	95		
	Day 3	17P634	104	109	100		
	Day 3	17P633	111	95	87		
	Day 3	17P635	120	135	95		
	Day 28	17P704	117	100	75		86
	Day 28	17P710	100	119	109	99	99
	Day 28	17P699	114	120	72	103	122
	Day 28	17P678	102	167	128	112	91
	Day 28	17P674	123	116	96	126	100
1,25 NP	Day 3	17P649	112	134	60		
	Day 3	17P654	117	140	100		
	Day 3	17P648	159	139	138		
	Day 3	17P650	100	149			
	Day 3	17P661	102	121	84		
	Day 3	17P657	138	100	84		
	Day 28	17P651	105	124		112	
	Day 28	17P662	135	155	94	85	76
	Day 28	17P656	111	109	104	88	85
	Day 28	17P663	131	117	110	100	100
	Day 28	17P765	87	120	110	80	111
	Day 28	17P848	118	146	111	126	104
	Day 28	17P847	125	178	127	133	130
	Day 28	17P184	125	105	101	106	108
	Day 28	17P185	125	151	134	98	60

Supplemental Table 16 - Diastolic Blood Pressure (mm Hg) of animals

Group	Day	Pig ID	Day-28-CKD	D0-AVF	D3	D14	D28
Vehicle	Day 3	17P630	97	72	27		
	Day 3	17P631	66	72	25		
	Day 3	17P634	73	77	70		
	Day 3	17P633	76	57	57		
	Day 3	17P635	60	84	37		
	Day 28	17P704	70	60	66		60
	Day 28	17P710	69	60	70	32	44
	Day 28	17P699	82	75	48	95	64
	Day 28	17P678	66	100	78	85	74
	Day 28	17P674	76	86	48	82	61
1,25 NP	Day 3	17P649	74	81	29		
	Day 3	17P654	68	76	60		
	Day 3	17P648	96	81	82		
	Day 3	17P650	60	92			
	Day 3	17P661	61	77	44		
	Day 3	17P657	94	60	37		
	Day 28	17P651	72	104		55	
	Day 28	17P662	91	139	70	22	
	Day 28	17P656	84	76	63	31	
	Day 28	17P663	87	91	61	60	60
	Day 28	17P765	60	92	64	35	
	Day 28	17P848	78	129	64	81	51
	Day 28	17P847	93	98	76	65	73
	Day 28	17P184	73	74	66	32	
	Day 28	17P185	76	95	89	50	40

Supplemental Table 17: List of up-regulated genes

No.	Gene ID	FC	P value
1	ASB14	9.250692	0.0084
2	MSTN	7.290248	0.027345
3	PGR	5.333856	0.043648
4	RGS20	4.522766	0.01529
5	DEPDC1	3.943256	0.046998
6	CENPE	3.831751	0.024299
7	PATE2	3.796451	0.045171
8	SKA1	3.78377	0.046623
9	PLK4	3.126458	0.032409
10	DIAPH3	2.935054	0.048502
11	SLC12A3	2.751029	0.023585
12	DNA2	2.691887	0.041461
13	ANLN	2.579628	0.030532
14	OIP5	2.538655	0.021684
15	MRPL57	2.459472	0.045428
16	GINS1	2.309519	0.046345
17	CCDC34	2.289362	0.004697
18	EDIL3	2.260181	0.040446
19	C3orf80	2.243055	0.015601
20	CDCA7	2.237151	0.036949
21	CX3CR1	2.179689	0.020032
22	HSP90B1	2.0584	0.048371
23	CCNYL1	2.058294	0.044803
24	PSPH	2.0327	0.004292
25	DYNLL1	2.018773	0.013449
26	DNAAF2	2.012881	0.039966
27	ZNF165	1.981543	0.019562
28	TPM4	1.942128	0.021982
29	IQCM	1.92568	0.001897
30	TYMS	1.900281	0.039962
31	PFN4	1.879708	0.033573
32	TP53I3	1.863181	0.024668
33	SMIM26	1.858475	0.03838
34	TXNDC17	1.813372	0.039047
35	TIPIN	1.802911	0.048256
36	MRPL34	1.746083	0.018929
37	SKA2	1.738854	0.042262
38	LXN	1.737432	0.046051
39	ZYG11A	1.730904	0.027811
40	RHNO1	1.714195	0.036683
41	KLF10	1.711293	0.044458
42	KCTD21	1.692636	0.013793

43	ATG3	1.661655	0.045707
44	KDELR3	1.639926	0.030055
45	PTMA	1.632855	0.039463
46	COPB2	1.626082	0.046192
47	LRRC59	1.614715	0.03611
48	CDK2AP1	1.614474	0.004215
49	MRPL51	1.614205	0.036713
50	MORF4L2	1.611351	0.037198
51	PRIM2	1.579919	0.03011
52	RPA3	1.548575	0.030613
53	NUDT15	1.529794	0.034459

Supplemental Table 18: List of down-regulated genes

No.	Gene Id	FC	P value
1	UBE2J2	0.749901	0.040129
2	PRDM2	0.74886	0.013221
3	BAZ2A	0.745429	0.016028
4	UBIAD1	0.744883	0.015997
5	ORAI1	0.743355	0.045583
6	HPS4	0.742911	0.025784
7	TGIF2	0.742171	0.01417
8	ARHGAP6	0.741817	0.011973
9	TSPAN14	0.740569	0.04458
10	STAT5B	0.740536	0.007838
11	REEP2	0.740149	0.027948
12	MAP3K4	0.739456	0.01929
13	RP9	0.737553	0.006134
14	ICAM2	0.735043	0.049196
15	DTX2	0.734624	0.041941
16	DALRD3	0.733604	0.04932
17	WDFY2	0.732598	0.02475
18	AFF1	0.732515	0.006793
19	ADD1	0.731821	0.0499
20	ATXN7L1	0.731081	0.033009
21	HIPK2	0.730653	0.012315
22	PIGO	0.727847	0.04619
23	UBOX5	0.726416	0.024872
24	NINJ1	0.726285	0.006152
25	PRKAG2	0.725874	0.0106
26	SRRM2	0.725395	0.031366
27	FANCG	0.725276	0.045619
28	NUP214	0.723926	0.035968
29	ARID1B	0.723866	0.044074
30	CNNM4	0.722342	0.01567
31	PDPR	0.721078	0.030765
32	RAMP2	0.720933	0.033006
33	PLEKHO1	0.720656	0.045793
34	TMPPE	0.720412	0.007337
35	ERMARD	0.71938	0.025348
36	PHF12	0.717344	0.018159
37	NRDE2	0.717343	0.02207
38	RMND5B	0.717017	0.014604
39	GCC1	0.716944	0.036637
40	NFRKB	0.715334	0.013542
41	FANCF	0.714515	0.0437
42	SPATA2	0.71325	0.007213

43	SMARCD2	0.712389	0.039265
44	RPS28	0.711472	0.043232
45	S1PR1	0.710613	0.043987
46	TDRD10	0.71032	0.046195
47	CNNM3	0.709363	0.002276
48	PHYKPL	0.708837	0.03126
49	ATXN2L	0.706926	0.034626
50	LRRC8B	0.705227	0.049791
51	MPPE1	0.704104	0.022071
52	INSR	0.703612	0.020042
53	UBL7	0.702408	0.044898
54	PPIP5K1	0.702262	0.03328
55	INO80C	0.701828	0.016783
56	PISD	0.701318	0.030385
57	SMARCD1	0.700524	0.04014
58	CREBBP	0.70021	0.009367
59	GFOD1	0.699749	0.004079
60	ZFAND3	0.69896	0.031653
61	TAF8	0.697952	0.027581
62	C6orf136	0.697517	0.03412
63	PRKCE	0.695442	0.005486
64	MTMR14	0.693945	0.00768
65	APBA1	0.693357	0.01595
66	MARCHF8	0.690294	0.009041
67	BRI3	0.689644	0.021584
68	PPP1R3B	0.689293	0.037275
69	ARID3B	0.689042	0.046081
70	MKNK1	0.688224	0.004598
71	AMBRA1	0.687408	0.042555
72	SH3D19	0.687401	0.041737
73	MPP1	0.687252	0.024454
74	HSD17B8	0.686369	0.021658
75	PXN	0.683836	0.043395
76	NFATC1	0.682159	0.048212
77	PWWP3A	0.680645	0.030866
78	SLC5A10	0.680106	0.029207
79	PYGM	0.680096	0.01741
80	WASF2	0.679911	0.004091
81	MOB3A	0.679583	0.048591
82	CAPS	0.678497	0.041282
83	FZD4	0.676814	0.004169
84	VMAC	0.676332	0.040179
85	ADRB2	0.675021	0.020692
86	BRD4	0.674364	0.009359
87	NAGK	0.673816	0.035186

88	PACSIN2	0.6738	0.0241
89	SLC9A8	0.673626	0.001933
90	REELD1	0.670934	0.038137
91	FNIP2	0.670671	0.004876
92	MAP3K3	0.670656	0.001432
93	NDUFAF3	0.670231	0.017113
94	CCDC189	0.669882	0.045682
95	FOXO1	0.668814	0.041969
96	ANGEL1	0.668462	0.03663
97	SLCO2B1	0.667781	0.022602
98	B3GNT3	0.667565	0.024819
99	EP400	0.666781	0.047907
100	ANKZF1	0.666246	0.038989
101	STAT5A	0.665632	0.044792
102	ZFYVE1	0.662952	0.026502
103	ZNF217	0.661514	0.024524
104	MAST3	0.661041	0.018361
105	EFCAB8	0.660614	0.03607
106	YJU2	0.660224	0.032449
107	DAZAP1	0.660222	0.003724
108	MRPS18A	0.658926	0.031796
109	TSC1	0.658668	0.032864
110	RDH16	0.657836	0.020988
111	BICRAL	0.656541	0.049095
112	LRRK1	0.656336	0.011094
113	CECR2	0.656029	0.010888
114	EZH1	0.655901	0.018357
115	ZNF174	0.655623	0.038889
116	PLBD2	0.65478	0.011784
117	MFNG	0.654543	0.035394
118	MIDEAS	0.653732	0.004296
119	CORO2A	0.6533	0.013114
120	TRMU	0.65282	0.033338
121	ssc-mir-7142	0.652542	0.010705
122	CSAD	0.652157	0.016567
123	ME3	0.651782	0.002455
124	SFMBT2	0.651534	0.03187
125	POLL	0.650534	0.046336
126	DAPK1	0.650513	0.011241
127	SYNE3	0.650499	0.046976
128	SAG	0.650318	0.036631
129	RGL1	0.649534	0.024876
130	USF2	0.649488	0.029187
131	NUDT17	0.648814	0.038907
132	CRTC3	0.648361	0.005493

133	PSKH1	0.64808	0.027437
134	SCNN1A	0.647387	0.008464
135	ZNRF3	0.64699	0.03314
136	WBP2	0.646614	0.006765
137	ZNF672	0.646365	0.013106
138	SLC25A28	0.646156	0.048272
139	FCSK	0.645863	0.020111
140	RUBCNL	0.644536	0.018427
141	FOXRED2	0.644256	0.036103
142	CYB561A3	0.643942	0.01219
143	ZFYVE27	0.641753	0.024301
144	TYK2	0.638475	0.027256
145	NISCH	0.637768	0.044905
146	ATG13	0.637528	0.009848
147	CHKA	0.637183	0.002633
148	CCDC69	0.635351	0.038458
149	PSTPIP1	0.633273	0.038165
150	RHBDD2	0.631657	0.024366
151	GGA2	0.63029	0.004293
152	KDM8	0.629716	0.043815
153	IRS2	0.629094	0.011258
154	LURAP1	0.628632	0.025261
155	SH2D3C	0.628346	0.017336
156	FHDC1	0.62771	0.044328
157	NRM	0.627264	0.047448
158	IDH3G	0.626791	0.031154
159	COQ4	0.626638	0.020365
160	LDB1	0.625545	0.02283
161	ELMO2	0.625328	0.004717
162	OTUD1	0.624548	0.012115
163	DHRS1	0.624017	0.010818
164	NTN1	0.623547	0.047593
165	ZNF274	0.623147	0.016884
166	RFX5	0.622883	0.02133
167	ASB1	0.620291	0.040079
168	TMEM86A	0.62001	0.02999
169	GPR182	0.6196	0.044989
170	ENPP5	0.618339	0.049995
171	WHAMM	0.617242	0.000333
172	ZNF76	0.616499	0.037622
173	ZPLD1	0.613642	0.046347
174	ZNF438	0.612947	0.016036
175	WDR83	0.612331	0.041599
176	XRCC1	0.611572	0.049537
177	DEF6	0.610863	0.039695

178	GPD1	0.609826	0.033788
179	VAMP5	0.609449	0.013502
180	SEZ6	0.609125	0.038447
181	PTGDR2	0.609021	0.035066
182	TAL1	0.608965	0.017741
183	TMCC3	0.608875	0.014328
184	ZDHHC18	0.607872	0.04935
185	EBI3	0.60772	0.035961
186	UBE2D4	0.607693	0.045706
187	KLF2	0.606775	0.016488
188	SMIM9	0.604355	0.0412
189	FAM117A	0.60432	0.009658
190	MINDY1	0.603458	0.038283
191	MED15	0.603132	0.021571
192	SNRNP70	0.601952	0.035697
193	RABGGTA	0.599438	0.036674
194	MAGI2	0.599255	0.006127
195	NHSL1	0.599128	0.002647
196	UNK	0.598403	0.042785
197	FBRSL1	0.598318	0.043104
198	PEX5	0.597637	0.023885
199	PLAGL2	0.59762	0.002745
200	TMEM53	0.596044	0.049885
201	ZNF408	0.595451	0.03463
202	DTX4	0.594748	0.034222
203	F8	0.5934	0.030087
204	KLF9	0.590009	0.018907
205	VSIR	0.590007	0.032056
206	SYT3	0.587828	0.037201
207	STING1	0.585599	0.04828
208	NAT9	0.58532	0.041771
209	ASB9	0.584996	0.031451
210	SQSTM1	0.583195	0.011725
211	RALGPS1	0.579997	0.010428
212	LMBR1L	0.579906	0.009539
213	AKNA	0.576154	0.042204
214	ssc-mir-326	0.575802	0.037092
215	TENT5C	0.575162	0.039615
216	ssc-mir-425	0.574603	0.022188
217	TMEM145	0.574278	0.0273
218	MPND	0.573483	0.022389
219	NPFF	0.572369	0.024291
220	HRC	0.571366	0.046536
221	DEF8	0.571349	0.047735
222	TMOD4	0.57005	0.042765

223	ssc-mir-7134	0.568926	0.029299
224	ZNF202	0.568292	0.010133
225	KCTD13	0.566643	0.049658
226	ZNF704	0.565146	0.039844
227	PIP5K1C	0.565059	0.045438
228	THNSL2	0.564093	0.020868
229	MID1	0.562136	0.017635
230	HSPA1L	0.561717	0.002524
231	CERS4	0.561261	0.011392
232	ANKDD1A	0.561231	0.028517
233	NFKBID	0.560944	0.001595
234	KANK3	0.559095	0.047392
235	MOCOS	0.557174	0.016812
236	STOML1	0.556889	0.038229
237	FKBP5	0.556736	0.027238
238	NTN5	0.556192	0.034343
239	HSD17B1	0.555956	0.018589
240	ssc-mir-32	0.554635	0.031062
241	PPARGC1B	0.553967	0.043337
242	SAP25	0.552136	0.04984
243	DAGLB	0.552067	0.007455
244	NR3C2	0.551358	0.030602
245	RASGEF1B	0.550873	0.02447
246	FAXDC2	0.550792	0.032782
247	NAGLU	0.549801	0.015674
248	PLEKHA6	0.547792	0.046491
249	LRCH4	0.54753	0.039475
250	PAMR1	0.547087	0.025656
251	KLHL35	0.54657	0.032759
252	MIRLET7G	0.544836	0.01828
253	DNAH1	0.543723	0.04856
254	SEMA5A	0.543694	0.005687
255	SHFL	0.543134	0.019756
256	MIR25	0.542636	0.030543
257	MYH7B	0.54101	0.021935
258	NBEAL2	0.539588	0.013535
259	TMEM134	0.53944	0.025058
260	ALOX15B	0.539058	0.049893
261	ARRDC2	0.538569	0.014735
262	GABARAPL1	0.538528	0.004624
263	MAN2C1	0.536982	0.024752
264	PLEKHA7	0.535722	0.023133
265	ELOVL2	0.53477	0.012178
266	CES5A	0.53398	0.039453
267	IZUMO4	0.533777	0.025988

268	PRDM11	0.533384	0.037771
269	RGSL1	0.532683	0.029178
270	SLC2A4	0.531279	0.044559
271	SH3YL1	0.528231	0.01623
272	GABBR1	0.525573	0.029611
273	ITIH5	0.524394	0.035727
274	PIK3R6	0.523159	0.036427
275	GPSM3	0.521865	0.037712
276	PTPRE	0.521563	0.002322
277	CCDC42	0.52132	0.029773
278	ACE	0.520491	0.033514
279	ssc-mir-191	0.520096	0.003612
280	FGD2	0.516366	0.041134
281	RBM38	0.51588	0.049818
282	MYO18B	0.513865	0.013814
283	NEURL1	0.510004	0.04095
284	ARHGEF4	0.507711	0.041669
285	OSM	0.507411	0.041823
286	LGI4	0.506388	0.039701
287	SLC27A3	0.506322	0.041879
288	CATSPERG	0.506051	0.017757
289	ABAT	0.505519	0.027347
290	ADAMTSL4	0.504577	0.007989
291	GNAT1	0.502972	0.041715
292	CASTOR1	0.502759	0.04
293	TSC22D3	0.500782	0.007565
294	KIAA2012	0.500549	0.042215
295	HAND2	0.500488	0.049832
296	HLA-DOB	0.500441	0.026944
297	AMHR2	0.500397	0.025024
298	PICK1	0.499788	0.007506
299	RINL	0.498882	0.002431
300	THPO	0.498589	0.047675
301	DNAJB13	0.497036	0.023622
302	SLC25A41	0.493084	0.01675
303	NFKBIA	0.492894	0.017272
304	PIWIL2	0.492637	0.02091
305	TMEM140	0.492256	0.031167
306	ADAM23	0.490416	0.046672
307	MLXIP	0.487074	0.020588
308	DUSP15	0.487037	0.01567
309	PTX4	0.48662	0.005837
310	FGB	0.48618	0.042796
311	SBSN	0.486024	0.011586
312	LENG8	0.483938	0.032762

313	FRS3	0.483792	0.016488
314	GLP2R	0.481672	0.046414
315	FRAS1	0.481651	0.027659
316	AIF1L	0.480614	0.015212
317	NDRG2	0.479175	0.015297
318	MAP4K2	0.475648	0.01242
319	MYBPC2	0.474633	0.031882
320	FAM167A	0.474495	0.013097
321	GRIP2	0.47404	0.041308
322	SLC4A11	0.473558	0.009585
323	RYR2	0.473109	0.042465
324	TMEM178B	0.468872	0.014397
325	DLGAP1	0.468511	0.040903
326	ssc-mir-29b-2	0.467087	0.029199
327	PIK3IP1	0.46602	0.004516
328	TRAF1	0.463946	0.002529
329	COQ8A	0.463869	0.023985
330	TCTEX1D4	0.46354	0.049914
331	P2RX6	0.462561	0.044825
332	MIR26B	0.462109	0.001839
333	GRAMD1B	0.46203	0.039477
334	CHP2	0.461467	0.01738
335	RDH13	0.460017	0.026569
336	ACER2	0.459203	0.010189
337	STUM	0.455167	0.002562
338	KDF1	0.453988	0.037076
339	AKAP12	0.452143	0.001227
340	FMO1	0.450511	0.016079
341	WDR93	0.449308	0.028904
342	NRIP2	0.447954	0.020415
343	RBPMS2	0.444859	0.04507
344	MYOZ1	0.444839	0.031309
345	ssc-mir-9855-1	0.443224	0.027968
346	SPOCK2	0.442905	0.011917
347	SPATA25	0.441974	0.020727
348	PTH1R	0.441906	0.031114
349	GPR75	0.440497	0.015274
350	CFAP99	0.43676	0.035893
351	FAM83H	0.436193	0.007376
352	CBLN3	0.433607	0.003699
353	KCNK7	0.433007	0.039651
354	SLC39A5	0.427181	0.004672
355	PAPLN	0.426704	0.039667
356	UNC5C	0.423815	0.009323
357	MISP	0.423541	0.017187

358	LRRC2	0.423441	0.026865
359	RAB26	0.418494	0.034832
360	KLHL38	0.417503	0.049782
361	ICAM5	0.415967	0.033537
362	MIR148A	0.414489	0.039174
363	LINGO1	0.414396	0.024923
364	USP2	0.411691	0.00956
365	ACKR2	0.409918	0.009228
366	CYP2B22	0.407468	0.03015
367	SLC24A1	0.406853	0.046879
368	P2RX1	0.405794	0.021243
369	TMIGD1	0.405382	0.038578
370	RUNDC3A	0.404235	0.049591
371	TMEM266	0.40065	0.016457
372	ADRA1A	0.399225	0.048297
373	ITPKC	0.398172	0.008447
374	ANK1	0.396142	0.041579
375	WNK2	0.396037	0.015552
376	OTOS	0.394906	0.034534
377	LSMEM2	0.39055	0.008865
378	AIFM3	0.390231	0.016448
379	PLEKHH1	0.389088	0.033188
380	ATP1B2	0.386977	0.000399
381	REEP1	0.384178	0.013129
382	HPN	0.382181	0.013473
383	UROC1	0.375354	0.049565
384	ZAN	0.374978	0.020128
385	CDX1	0.37462	0.013274
386	PER1	0.374021	0.011739
387	TTYH1	0.372703	0.002565
388	ADAMTS13	0.371539	0.011266
389	ADORA3	0.365448	0.008205
390	NEURL3	0.364959	0.024604
391	RAB20	0.363196	0.029874
392	SRL	0.361975	0.015213
393	ssc-mir-365-2	0.358679	0.020025
394	MYO7B	0.358431	0.010463
395	A2M	0.357922	0.021582
396	SPTBN5	0.352409	0.001526
397	TEKT2	0.352319	0.00975
398	KLF15	0.351286	0.020876
399	AQP10	0.336978	0.000474
400	MARCHF10	0.325523	0.000907
401	SLC9A3	0.323383	0.049719
402	CRHR2	0.32252	0.027999

403	ARMC12	0.322422	0.010381
404	CDHR5	0.321208	0.040029
405	PLA2G12B	0.319517	0.019363
406	ssc-mir-101-2	0.317847	0.011226
407	GPR45	0.314427	0.028867
408	SLC5A9	0.313104	0.044227
409	IGSF9B	0.310437	0.0399
410	PPARGC1A	0.307231	0.003742
411	ssc-mir-152	0.304657	0.021353
412	TTLL11	0.302893	0.03817
413	CAMK2A	0.299067	0.045544
414	HIPK4	0.298488	0.026552
415	GDPD2	0.297877	0.049556
416	MYBPC3	0.297188	0.000389
417	VIPR2	0.296417	0.042129
418	CRYBG2	0.296016	0.038845
419	C11orf94	0.290294	0.011266
420	RAP1GAP	0.290053	0.020212
421	VWA7	0.284607	0.001871
422	STAP2	0.283992	0.048288
423	ATP1A4	0.280424	0.006961
424	DPEP3	0.279068	0.010639
425	TBX20	0.277852	0.014904
426	SCGB3A1	0.276209	0.033114
427	ACR	0.271878	0.049036
428	PRRT4	0.271611	0.029544
429	B3GNT4	0.270207	0.012982
430	NT5DC3	0.266995	0.049166
431	GLP1R	0.264695	0.01049
432	ADGRF3	0.258138	0.000511
433	CAMK2B	0.257742	0.0003
434	LRRC43	0.256006	0.035554
435	PLA2G4E	0.251999	0.007085
436	ARL14EPL	0.250083	0.003261
437	ZMYND15	0.245289	0.034268
438	PRX	0.245232	0.04561
439	NPHS1	0.243495	0.029287
440	COL4A4	0.242987	0.019381
441	HJV	0.234349	0.005378
442	IQCA1	0.231872	0.045675
443	TAC4	0.216655	0.039063
444	IL29	0.213786	0.006572
445	CELF5	0.206875	0.007731
446	PEX5L	0.201277	0.046381
447	WNT6	0.183577	0.008984

448	ARHGEF16	0.177339	0.012038
449	WDR49	0.174465	0.022826
450	SFRP5	0.174271	0.004018
451	PGC	0.15921	0.014612
452	MIR106B	0.155955	0.004283
453	EPB42	0.153543	0.029144
454	C3orf49	0.151049	0.024925
455	SCT	0.142309	0.013612
456	PTCHD4	0.139021	0.00379
457	KIF2B	0.129305	0.005829
458	TEX35	0.125136	0.012733
459	ZIC2	0.123914	0.04228
460	LRRC4B	0.123125	0.029937
461	AATK	0.109259	0.046055
462	SRARP	0.108792	0.019909
463	KIF19	0.107862	0.020157
464	ssc-mir-130b	0.090598	0.010351
465	ssc-mir-181d	0.080046	0.018663
466	COL11A2	0.060649	0.004757
467	NRSN2	0.038986	0.003496
468	GHRHR	0.029574	0.000481