Renal Autologous Cell Therapy (REACT®) for Diabetic Chronic Kidney Disease: REGEN-007 Phase II Trial Evaluating Bilateral Cortex Injections and Re-Dosing Trigger

J Stavas[1], A Silva[2], A Aqeel[3], T Wooldridge[4], M Yanover[5], R Prakash[5], N Mirkovic[1]

1. ProKidney, Raleigh, NC, USA 2. Boise Kidney & Hypertension, Boise, ID, USA 3. Paragon Health Nephrology, Kalamazoo, MI, USA 4. Nephrology & Hypertension Assoc, Tupelo, MS, USA 5.Kidney Assoc of Colorado, Denver, CO, USA

INTRODUCTION

REACT is a novel autologous cell-based therapy composed of selected renal cells, undergoing investigative clinical trials to preserve kidney function in diabetic participants with late stage CKD.

AIM

To conduct an open label phase II study to evaluate how participants respond to REACT following bilateral kidney injections into the cortex vs a re-dosing trigger.

METHOD

- REGEN-007 (NCT05018416) is a multisite Phase II, open label, 1:1 randomized controlled trial
- Participants are randomized into 2 cohorts
- Cohort 1- receives a REACT injection into each kidney 3 months apart
- Cohort 2- receives 1 REACT injection and a 2nd REACT injection into the contralateral kidney if they meet a re-dose trigger
  - Re-dose Triggers (30-day sustainment)
    - Sustained eGFR decline of ≥ 20% and/or
    - Increase in the urine albumin to creatinine ratio (UACR) from baseline of ≥ 30% and ≥ 30mg/g
- Key inclusion criteria include age 30-80 with Type 1 or 2 diabetes and Chronic Kidney Disease, eGFR 20-50 ml/min/1.73 m^2, UACR 300-5000 mg/g
- Each participant undergoes a percutaneous kidney biopsy and *ex vivo* expansion of their selected renal cells and formulated in a cryo-preservative

RESULTS

- REGEN-007 is fully enrolled with 53 participants randomized
- Efficacy endpoint is eGFR slope improvement from first injection to 18 months after last injection

Participant Information	Cohort 1 Mean/n (SD/ %)	Cohort 2 Mean/n (SD/%)
N	27	26
Age	62.3 (10.66)	58.31 (11.48)
Gender (Male)	18 (67)	19 (73)
Ethnicity (Non-Hispanic or Latino)	27(100)	25(96)
Race		
Black or African American	2(7)	4(15)
White	25(93)	22(85)
Other	0(0)	0(0)
eGFR CKD stage at Screening		
3A	0(0)	2(7)
3B	17(63)	16(62)
4	10(37)	8(31)
Diabetes Type		
Type 1	2(7)	8(31)
Type 2	25(93)	18(69)
Years with Diabetes		
Years with Diabetes	19.0 (9.61)	23.8 (11.9)

Table 1. *Baseline Characteristics for all participants by cohort*

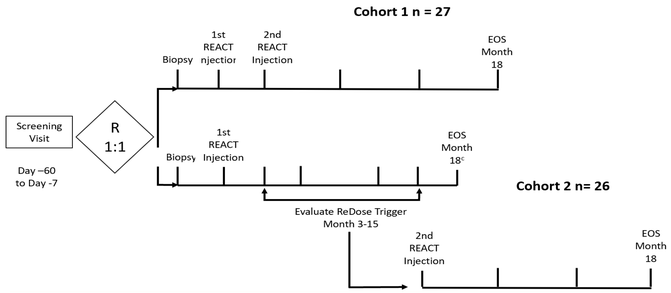

Figure 1. Schematic of Study Design

Laboratory	Cohort 1 Mean (SD, %)	Cohort 2 Mean (SD, %)
eGFR CKD-EPI (Sr Creatinine)	31.3 (6.62)	34 (8.22)
Serum Creatinine (mg/dl)	2.1 (0.47)	2.1 (0.57)
Cystatin C (mg/L)	2.1 (0.39)	2.0 (0.36)
Hemoglobin (g/dL)	12.6 (1.53)	13.2 (1.67)
Hematocrit (%)	36.7 (4.57)	38.7 (5.21)
Serum Potassium (mEq/L))	4.8 (0.41)	4.8 (0.62)
Serum Bicarbonate (mEq/L)	20.4 (2.17)	20.8 (3.17)
HbA1c	7.1 (1.27)	7.5 (0.96)
UACR Random (mg/g)	612	529
[IQR]	[148.5, 2271.75]	[156.5, 831]
Concomitant Medications	**Cohort 1 n (%)**	**Cohort 2 n (%)**
ACEi/ARB	20 (74.0)	21 (80.8)
Beta Blocker	11(40.7)	14(53.8)
Antiglycemic Therapy	27(100)	26(100)
SGLT2i	12(44.4)	9(34.6)
Platelet Inhibitors	14(51.9)	14 (53.8)

Table 2. *Baseline lab and concomitant medications for all participants by cohort*

Pre-Existing Comorbidities REGEN-007		
System Organ Class	**Cohort 1 n (%)**	**Cohort 2 n (%)**
Renal	27(100)	26(100)
Metabolic	27(100)	26(100)
Musculoskeletal	17(62.9)	19(73.1)
Cardiovascular	18(66.7)	10 (38.4)
GI	17(62.9)	18(69.2)
Infections	10(38.5)	18(69.2)
Respiratory	11(42.3)	18(69.2)

Table 3. Pre-existing comorbidities by cohort for participants in REGEN-007

CONCLUSIONS

- REACT autologous cell-based therapy has the potential to effect nephron structure and renal function by preserving, stabilizing or improving diabetes-related CKD progression
- REGEN-007 Phase 2 clinical trial intends to determine renal function dependent dosing, time to treatment, and efficacy with bilateral kidney injections
- REACT has been tolerated with a low frequency of procedural related events to date

ACKNOWLEDGEMENTS

We extend our thanks to participants, their families and Investigators in the effort to preserve renal function and prevent ESRD. In addition, our thanks to the Staff and Ethics Committees at our trial sites. All trial studies are funded by ProKidney.

REFERENCES

1.ClinicalTrials.gov identifier: NCT05018416.https://www.clinicaltrials.gov/ct2/show/NCT05018416.

2. Stavas, J. et al. (2022). Novel Renal Autologous Cell Therapy for Type 2 Diabetes Mellitus Chronic Diabetic Kidney Disease: Clinical Trial Design. Am J Nephrol, 53(1), 50-58. https://doi.org/10.1159/000520231

3. Stavas, J et al. (2022). Renal Autologous Cell Therapy to Stabilize Function in Diabetes-Related Chronic Kidney Disease: Corroboration of Mechanistic Action With Cell Marker Analysis. Kidney International Reports. https://doi.org/10.1016/j.ekir.2022.04.014

CONTACT INFORMATION

Joseph Stavas - joseph.stavas@prokidney.com