**Supplemental Material Table of Contents**:

## Supplemental Methods

### *Reactive oxygen species assay*

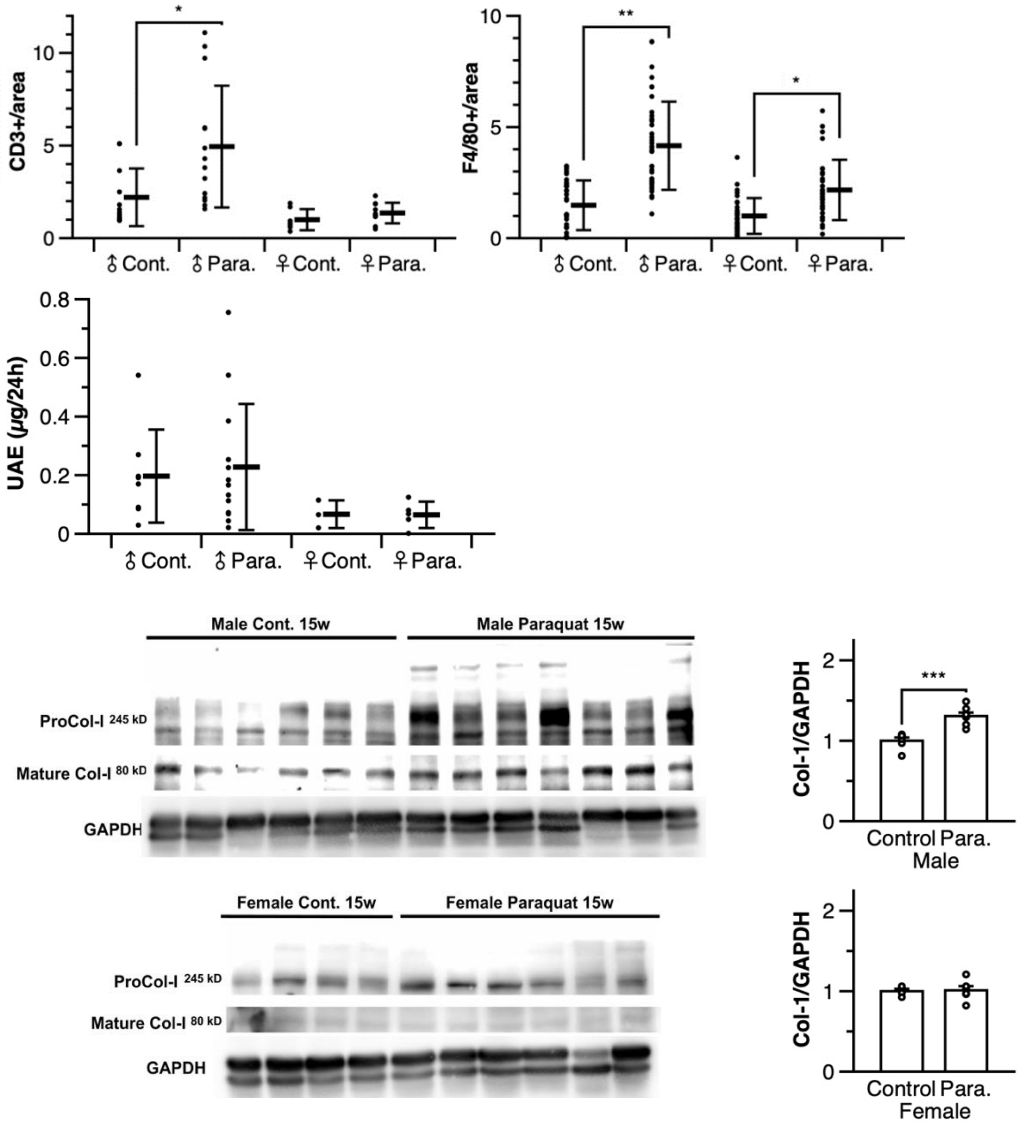
BUMPT cells were obtained from Dr. Zheng of Augusta University and cultured as previously described (1). Cells seeded on poly-L-lysine-coated cover slips were treated with either paraquat (5 μM) or vehicle for 16 hours. MitoSOX (ThermoFisher) staining was performed as previously described (2) and fluorescence (integrated density) per cell was quantified for each high power field (HPF, at 20x) using ImageJ software. Samples were prepared in triplicates and 3 HPF were counted per sample. Relative MitoSOX intensity was analyzed using Student's T-test.

### *Western blotting*

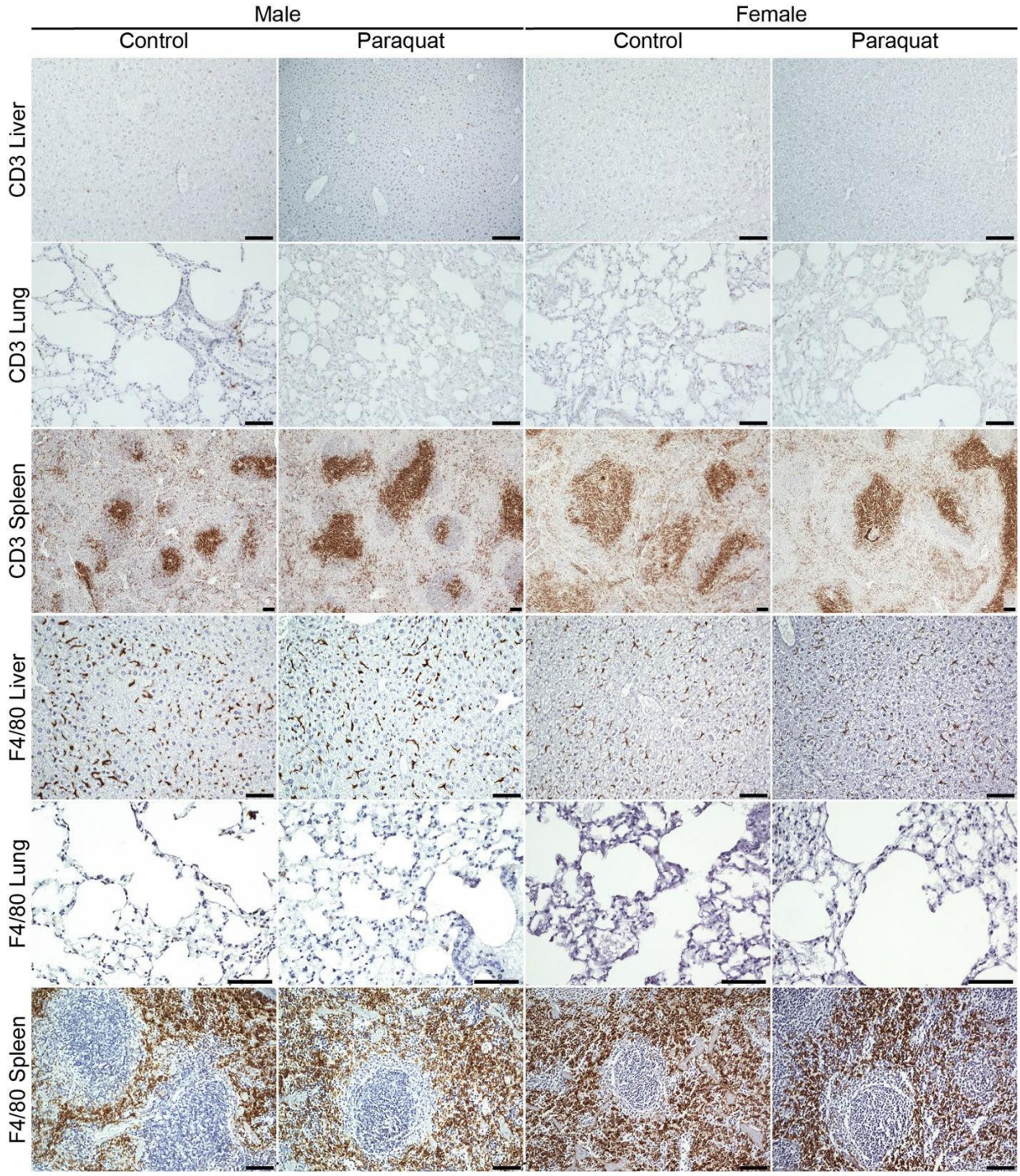
Total mouse kidney lysates were prepared and analyzed by Western blot as previously described (2). Briefly, protein concentrations were determined using BCA assay kit (ThermoFisher, Waltham, MA). Samples were prepared using Laemmli sample buffer (Bio-rad, Hercules, CA) and dithiothreitol (Sigma-Aldrich); samples used for collagen-I detection were not reduced or boiled. Tris-glycine gels (8%) with and without SDS were used for OCT2/MATE-1 and Col1, respectively. Proteins were transferred to nitrocellulose membrane using the Trans-Blot Turbo Transfer System (Bio-rad). Primary antibodies included anti-collagen I (Novus Biologicals, Centennial, CO), anti-OCT2 (Abcam), anti-MATE-1 (Biorbyt, St. Louis, MO) anti-beta actin (Bio-rad) and anti-GAPDH (Millipore Sigma, Burlington, MA).

1. Zheng M, Cai J, Liu Z, Shu S, Wang Y, Tang C, Dong Z: Nicotinamide reduces renal interstitial fibrosis by suppressing tubular injury and inflammation. *J Cell Mol Med,* 23**:** 3995-4004, 2019

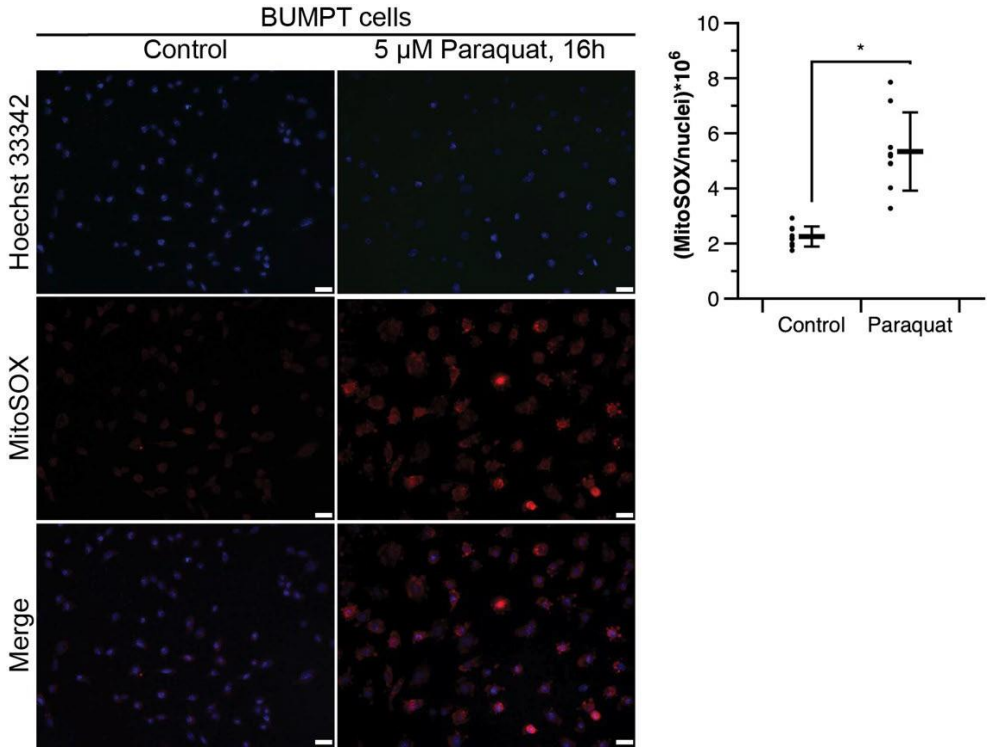
2. Luping H, Tatiana B, Minyi C, Gabriel D, Dajun L, David S-H: Overexpression of stanniocalcin-1 inhibits reactive oxygen species and renal ischemia/reperfusion injury in mice. *Kidney International,* 82**:** 867-877, 2012



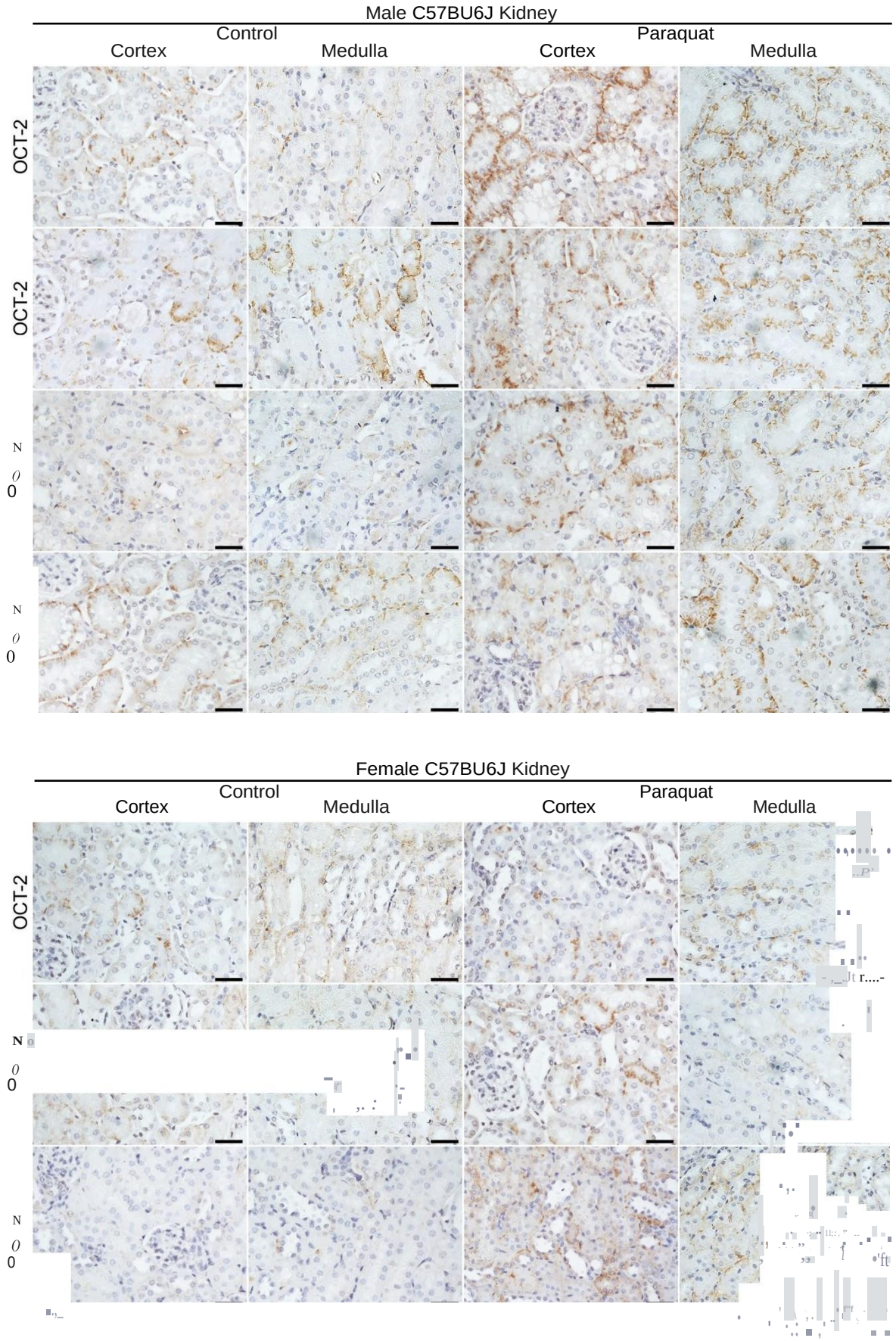

**Supplemental Figure 1. CD3 and F4/80 immunohistochemical staining, albuminuria and collagen-1 expression in paraquat versus control treated mice.** *Upper,* Quantification of CD3+ and F4/80+ immunohistochemical staining at 10 weeks in kidney tissue of paraquat-treated versus saline-treated mice; Data are plotted as positively stained area/cells normalized to female control; * P, <0.01. **, P< 0.001. Female mice displayed 1.3-fold (p=0.4) and 2.3-fold (p<0.01) increase in CD3 and F4/80, respectively. Error bars represent SD. *Middle*, urine collection over 12 hours was performed at completion of 15 weeks of either saline or paraquat (20 mg/kg) injections, and urine albumin was measured by ELISA. No difference was observed in males or females treated with paraquat versus saline. *Lower*, collagen type-I detected by Western blot in whole kidney lysates of male and female mice treated for 15 weeks with paraquat versus saline. Both procollagen and mature collagen bands were used in quantitation. GAPDH utilized as loading control. Adjacent graphs depict the means ± SEM of quantified collagen I expression normalized to GAPDH; ***, P < 0.001.



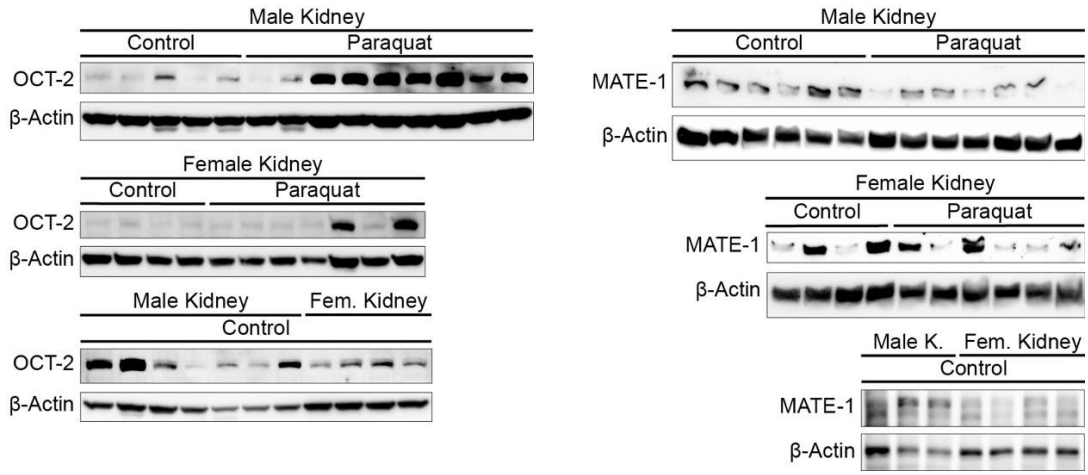

**Supplemental Figure 2. Lung, liver and spleen histology of paraquat versus vehicle treated control mice.** Representative immunohistochemical staining of CD3 and F4/80 in indicated organ sections from mice treated with paraquat or saline for 10 weeks. No differences were observed in CD3 or F4/80 staining in liver or lung. Scale bars are 50 μm.




**Supplemental Figure 3. *In vitro* reactive oxygen species generation in BUMPT cells with paraquat-treatment.** Representative micrographs of BUMPT mouse proximal tubule cells treated for 16 hours with paraquat (5 μM) or vehicle and stained with Hoechst 33342 (DNA) and MitoSOX, a mitochondrial superoxide indicator; scale bars 25 μm. Three replicates per treatment were imaged with 3 HPF each, and MitoSOX signal was quantified in ImageJ and normalized to number of nuclei. Bar is average, error bars are standard deviation; *, $P < 0.001$.


Male C57BU6J Kidney
Control
Paraquat
Cortex
Medulla
Cortex
Medulla
OCT-2
OCT-2
N
0
N
0
Female C57BU6J Kidney
Control
Paraquat
Cortex
Medulla
Cortex
Medulla
OCT-2
N
0
N
0

**Supplemental Figure 4. OCT-2 staining of male and female mice treated with paraquat or vehicle control.** Fixed paraffin-embedded kidney sections from male and female mice treated for 15 weeks with either paraquat or saline were immuno-stained for organic cation transporter-2 (OCT-2). Samples counterstained with hematoxylin; scale bar 25 μm, zoomed. Although MATE-1 expression in mouse kidney lysates was measured using Western blot, the antibody was not suitable for IP use in mice.




**Supplemental Figure 5. Western blots of total kidney lysates from paraquat or control mice probed for OCT-2 and MATE-1.**

Total kidney lysates from male and female mice treated with paraquat or saline for 15 weeks were analyzed by Western blot with indicated primary antibodies. Kidney OCT2 expression was higher ($P<0.01$) in male versus female mice. Paraquat treated male mice had higher ($P<0.02$) kidney OCT-2 expression than control male mice at 15 weeks. MATE-1 kidney expression decreased ($P<0.03$) in paraquat-treated male mice relative to saline-treated control.

**Supplemental Table 1A**

Characteristics among Mesoamerican nephropathy-kidney failure patients and non-Mesoamerican nephropathy-kidney failure patients.

| Characteristic | Mesoamerican nephropathy-kidney failure (N=52) | Kidney failure from other causes (N=63) | p-value |
|---|---|---|---|
| Age* | 38.0 (30.0,46.0) | 45.0 (38.0,51.0) | <0.001 |
| | 22 - 60 | 25 - 73 | |
| Age when moved to US* | 21.5 (15.5,28.0) | 22.0 (18.0,28.0) | 0.44 |
| | 1 - 46 | 5 - 62 | |
| US-Farming years* | 0.0 (0.0,0.0) | 0.0 (0.0,0.0) | 0.52 |
| | 0 - 5 | 0 - 4 | |
| US-Construction years* | 0.3 (0.0,3.0) | 0.0 (0.0,3.0) | 0.33 |
| | 0 - 20 | 0 - 30 | |
| US-Landscaping years* | 0.0 (0.0,0.5) | 0.0 (0.0,0.0) | 0.036 |
| | 0 - 12 | 0 - 13 | |
| Duration (years) farming in origin country* [1] | 5.0 (0,12) | 0 (0,4) | <0.001 |
| | 0 - 34 | 0 - 49 | |
| [N of missing] | 0 | 1 | |
| Agrochemical exposure duration* [2] | 3.5 (0.0,10.0) | 0.0 (0.0,0.0) | <0.001 |
| [N of missing] | 0 - 23 | 0 - 20 | |
| | 2 | 0 | |
| Agrochemical exposure episodes* [3] | 9.0 (0.0,160.0) | 0.0 (0.0,0.0) | <0.001 |
| | 0 - 4745 | 0 - 50 | |
| [N of missing] | 6 | 5 | |
| Years in Houston* | 13.5 (8.5,20.0) | 20.0 (13.0,24.0) | 0.008 |
| | 1 - 30 | 3 - 43 | |
| Gender | | | |
| Female | 2 (3.8) | 29 (46.0) | <0.001 |
| Male | 50 (96.2) | 34 (54.0) | |
| Origin country locale | | | |
| City | 16 (30.8) | 25 (39.7) | 0.32 |
| Village/farm | 36 (69.2) | 38 (60.3) | |
| Highest education achieved | | | |
| Some school | 40 (81.6) | 34 (59.6) | 0.02 |
| High school | 6 (12.2) | 20 (35.1) | |
| College | 3 (6.1) | 3 (5.3) | |
| [N of missing] | 3 | 6 | |
| Literate | 49 (94.2) | 57 (90.5) | |
| English - Second Language | 19 (36.5) | 16 (25.4) | |
| First degree relative with renal dx | 11 (21.2) | 9 (14.3) | |
| Diabetes mellitus | 0 (0.0) | 18 (28.6) | |
| Hypertension | 0 (0.0) | 44 (69.8) | |
| Herb/alternative medication use | 4 (7.7) | 1 (1.6) | 0.17 |
| Analgesic use | 19 (36.5) | 15 (23.8) | 0.14 |
| NSAID use | 5 (9.6) | 9 (14.3) | 0.46 |
| Drug allergies | 12 (23.1) | 17 (27.0) | 0.63 |
| Currently employed | 22 (42.3) | 18 (28.6) | |
| US Farming | 4 (7.7) | 3 (4.8) | 0.7 |
| US Construction | 30 (57.7) | 24 (38.1) | 0.04 |
| US Landscaping | 20 (38.5) | 11 (17.5) | 0.01 |
| Farming in origin country | 37 (71.2) | 20 (31.7) | <0.001 |
| Cane Cutter | 7 (13.5) | 8 (12.7) | 0.9 |

| Characteristic | Mesoamerican nephropathy-kidney failure (N=52) | Kidney failure from other causes (N=63) | p-value |
|---|---|---|---|
| Cotton/Corn | 32 (61.5) | 17 (27.0) | <0.001 |
| Animals | 17 (32.7) | 10 (15.9) | 0.03 |
| Other produce | 20 (38.5) | 18 (28.6) | 0.26 |
| Lived in another U.S. city | 16 (30.8) | 18 (30.0) | 0.9 |
| | 0 | 3 | |
| Country of origin - climate hot | 37 (71.2) | 38 (60.3) | 0.23 |
| Hydrates while working | 46 (88.5) | 52 (82.5) | 0.37 |
| Drank well water at work or home | 33 (63.5) | 17 (27.0) | <0.001 |
| Drank piped water at work or home | 6 (11.5) | 13 (20.6) | 0.19 |
| Drank bottled water at work or home | 13 (25.0) | 18 (28.6) | 0.67 |
| Drank river/spring water at work or home | 5 (9.6) | 9 (14.3) | 0.45 |
| Personal protective equipment | 3 (5.8) | 0 (0.0) | 0.09 |
| Exposure to any agent | 32 (61.5) | 10 (15.9) | <0.001 |
| Exposure to any agent without personal protective equipment | 29 (55.8) | 10 (15.9) | <0.001 |
| Exposure to paraquat | 14 (26.9) | 1 (1.6) | <0.001 |
| Exposure to paraquat without personal protective equipment | 14 (26.9) | 1 (1.6) | <0.001 |
| Exposure to multiple agents | 7 (13.5) | 3 (4.8) | 0.18 |
| Exposure to multiple agents without personal protective equipment | 7 (13.5) | 3 (4.8) | 0.18 |
| Exposure to unspecified agents | 16 (30.8) | 9 (14.3) | 0.03 |
| Exposure to unspecified agents without personal protective equipment | 13 (25.0) | 9 (14.3) | 0.15 |
| Exposure to other agent | 8 (15.4) | 2 (3.2) | 0.04 |
| Exposure to other agent without personal protective equipment | 8 (15.4) | 2 (3.2) | 0.04 |
| Rodent/bird | 24 (46.2) | 6 (9.5) | <0.001 |
| Insect bites | 35 (67.3) | 16 (25.4) | <0.001 |

* Median (inter-quartile range) and range for continuous factors, count (percentage) for other factors

[1]Among patients farming in original country, none of Mesoamerican nephropathy-kidney failure patient had duration of farming missing, 1 (5%) non-Mesoamerican nephropathy-kidney failure patient had duration of farming missing. Duration of farming was set to zero among patients without history of farming in original country.

[2]Among patients exposed to any agrochemical, 2 (6.3%) Mesoamerican nephropathy-kidney failure patients had duration of exposure missing, none of non-Mesoamerican nephropathy-kidney failure patients had duration of exposure missing. Duration of period exposed to agrochemical was set to zero among patients without history of any agrochemical exposure.

[3]Among patients exposed to any agrochemical, 6 (18.8%) Mesoamerican nephropathy-kidney failure patients had number of episodes of exposure missing, 5 (50%) of non-Mesoamerican nephropathy-kidney failure patients had episodes of exposure missing. Episodes or period of exposure to agrochemicals was set to zero among patients without history of any agrochemical exposure.

**Supplemental Table 1B**

Characteristics among Mesoamerican nephropathy-kidney failure patients and non-Mesoamerican nephropathy-kidney failure patients who did farm work in the original country.

| Characteristic | Mesoamerican nephropathy-ESKD (N=37) | Non-Mesoamerican nephropathy-ESKD (N=20) | p-value |
|---|---|---|---|
| Age* | 40.0 (34.0,46.0) | 45.5 (39.0,54.5) | 0.07 |
| | 22 - 60 | 25 - 73 | |
| Age when moved to US* | 23.0 (18.0,33.0) | 25.0 (18.5,30.0) | 0.63 |
| | 11 - 46 | 14 - 58 | |
| US-Farming years* | 0.0 (0.0,0.0) | 0.0 (0.0,0.0) | 0.97 |
| | 0 - 5 | 0 - 2 | |
| US-Construction years* | 0.3 (0.0,3.0) | 1.0 (0.0,3.0) | 0.88 |
| | 0 - 13 | 0 - 30 | |
| US-Landscaping years* | 0.0 (0.0,1.0) | 0.0 (0.0,0.3) | 0.45 |
| | 0 - 12 | 0 - 3 | |
| Duration (years) farming in origin country* | 9.0 (5.0,14.0) | 7.0 (5.0,12.0) | 0.92 |
| [1] | 0.3 - 34 | 2 - 49 | |
| [N of missing] | 0 | 1 | |
| Agrochemical exposure duration* [2] | 8.0 (2.0,11.0) | 0.0 (0.0,0.5) | <0.001 |
| [N of missing] | 0 - 23 | 0 - 20 | |
| | 2 | 0 | |
| Agrochemical exposure episodes* [3] | 45.0 (6.0,288.0) | 0.0 (0.0,2.5) | <0.001 |
| [N of missing] | 0 - 3600 | 0 - 50 | |
| | 6 | 4 | |
| Years in Houston* | 14.0 (9.0,20.0) | 13.0 (9.0,24.0) | 0.6 |
| | 1 - 30 | 3 - 43 | |
| Gender | | | |
| Female | 1 (2.7) | 6 (30.0) | 0.003 |
| Male | 36 (97.3) | 14 (70.0) | |
| Origin country locale | | | |
| City | 5 (13.5) | 2 (10.0) | 0.7 |
| Village/farm | 32 (86.5) | 18 (90.0) | |
| Highest education achieved | | | |
| Some school | 33 (97.1) | 13 (76.5) | |
| High school | 0 (0.0) | 3 (17.6) | |
| College | 1 (2.9) | 1 (5.9) | |
| [N of missing] | 3 | 3 | |
| Literate | 34 (91.9) | 17 (85.0) | |
| English - Second Language | 7 (18.9) | 4 (20.0) | |
| First degree relative with renal dx | 9 (24.3) | 1 (5.0) | 0.07 |
| Diabetes mellitus | 0 (0.0) | 6 (30.0) | |
| Hypertension | 0 (0.0) | 12 (60.0) | |
| Herb/alternative medication use | 2 (5.4) | 1 (5.0) | 0.95 |
| Analgesic use | 15 (40.5) | 2 (10.0) | 0.02 |
| NSAID use | 4 (10.8) | 2 (10.0) | 0.92 |
| Drug allergies | 7 (18.9) | 4 (20.0) | 0.9 |
| Currently employed | 14 (37.8) | 7 (35.0) | |
| US Farming | 2 (5.4) | 1 (5.0) | 0.95 |
| US Construction | 22 (59.5) | 10 (50.0) | 0.5 |
| US Landscaping | 17 (45.9) | 7 (35.0) | 0.4 |

| | | | |
|---|---|---|---|
| Farming in origin country | n/a | n/a | n/a |
| Cane Cutter | 7 (18.9) | 8 (40.0) | 0.09 |
| Cotton/Corn | 32 (86.5) | 16 (80.0) | 0.5 |
| Animals | 17 (45.9) | 10 (50.0) | 0.8 |
| Other produce | 18 (48.6) | 16 (80.0) | 0.02 |
| Lived in another U.S. city | 10 (27.0) | 7 (36.8) | 0.45 |
| | 0 | 1 | |
| Country of origin - climate hot | 26 (70.3) | 13 (65.0) | 0.68 |
| Hydrates while working | 33 (89.2) | 19 (95.0) | 0.46 |
| Drank well water at work or home | 31 (83.8) | 11 (55.0) | 0.02 |
| Drank piped water at work or home | 3 (8.1) | 3 (15.0) | 0.42 |
| Drank bottled water at work or home | 3 (8.1) | 1 (5.0) | 0.66 |
| Drank river/spring water at work or home | 5 (13.5) | 7 (35.0) | 0.06 |
| Personal protective equipment | 1 (2.7) | 0 (0.0) | 0.46 |
| Exposure to any agent | 30 (81.1) | 9 (45.0) | 0.005 |
| Exposure to any agent without personal protective equipment | 29 (78.4) | 9 (45.0) | 0.01 |
| Exposure to paraquat | 14 (37.8) | 1 (5.0) | 0.06 |
| Exposure to paraquat without personal protective equipment | 14 (37.8) | 1 (5.0) | 0.06 |
| Exposure to multiple agents | 7 (18.9) | 3 (15.0) | 0.7 |
| Exposure to multiple agents without personal protective equipment | 7 (18.9) | 3 (15.0) | 0.7 |
| Exposure to unspecified agents | 14 (37.8) | 8 (40.0) | 0.87 |
| Exposure to unspecified agents without personal protective equipment | 13 (35.1) | 8 (40.0) | 0.7 |
| Exposure to other agent | 8 (21.6) | 2 (10.0) | 0.27 |
| Exposure to other agent without personal protective equipment | 8 (21.6) | 2 (10.0) | 0.27 |
| Rodent/bird | 21 (56.8) | 3 (15.0) | 0.002 |
| Insect bites | 28 (75.7) | 8 (40.0) | 0.008 |

**Supplemental Table 2.**
Odds ratios from crude model and model adjusting for age and sex.

| Characteristic | Crude model | | Model adjusting for age and sex* | |
|---|---|---|---|---|
| | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Age contribution, 1 year | 0.94 (0.91, 0.98) | 0.001 | 0.94 (0.91, 0.98) | 0.007 |
| Contribution of age when moved to US, 1 year | 0.98 (0.95, 1.02) | 0.26 | 1.04 (0.98, 1.10) | 0.15 |
| Contribution of Farming while in US, 1 year | 1.11 (0.63, 1.98) | 0.71 | 0.89 (0.49, 1.59) | 0.68 |
| Contribution of Construction work while in US, 1 year | 0.97 (0.91, 1.04) | 0.46 | 0.92 (0.84, 1.00) | 0.06 |
| Contribution of Landscaping work while in US, 1 year | 1.13 (0.96, 1.33) | 0.14 | 1.03 (0.87, 1.20) | 0.76 |
| Duration (years) farming in origin country, 1 year* | 1.06 (1.00, 1.11) | 0.04 | 1.08 (1.02, 1.15) | 0.01 |
| agrochemical exposure, 1 year* | 1.39 (1.18, 1.64) | <0.001 | 1.33 (1.12, 1.58) | 0.001 |
| Years in Houston, 1 year | 0.93 (0.89, 0.98) | 0.006 | 0.97 (0.91, 1.03) | 0.26 |
| Gender, men vs. women | 21.32 (4.77, 95.30) | <.0001 | 20.22 (4.40, 93.05) | <0.001 |
| Origin country locale, village/farm vs. city | 1.48 (0.68, 3.21) | 0.32 | 2.42 (0.96, 6.10) | 0.06 |
| High school/College vs. some school* | 0.45 (0.20, 1.06) | | 0.30 (0.11, 0.83) | |
| Literate, Yes vs. No | 1.72 (0.41, 7.24) | | 0.92 (0.16, 5.19) | |
| ESL, Yes vs. No | 1.69 (0.76, 3.77) | | 1.02 (0.40, 2.60) | |
| First degree relative with renal dx, Y vs. N | 1.61 (0.61, 4.25) | 0.34 | 2.21 (0.65, 7.48) | 0.2 |
| Diabetes mellitus, Yes vs. No | n/a | n/a | n/a | n/a |
| Hypertension, Yes vs. No | n/a | n/a | n/a | n/a |
| Herb/alternative medication use, Y vs. N | 5.17 (0.56, 47.73) | 0.15 | 1.76 (0.18, 17.38) | 0.63 |
| Analgesic use, Yes vs. No | 1.84 (0.82, 4.14) | 0.14 | 1.70 (0.65, 4.41) | 0.28 |
| NSAID use, Yes vs. No | 0.64 (0.29, 2.77) | 0.45 | 0.60 (0.16, 2.26) | 0.45 |
| Drug allergies, Yes vs. No | 0.81 (0.35, 1.90) | 0.63 | 1.63 (0.55, 4.77) | 0.37 |
| Currently employed, Yes vs. No | 1.83 (0.84, 3.98) | | 0.89 (0.35, 2.22) | |
| Farming while in US, Yes vs. No | 1.67 (0.36, 7.81) | 0.52 | 1.38 (0.24, 7.85) | 0.72 |
| Construction work while in US, Yes vs. No | 2.22 (1.05, 4.69) | 0.037 | 0.55 (0.21, 1.48) | 0.24 |
| Landscaping work while in US, Yes vs. No | 2.95 (1.25, 6.96) | 0.013 | 1.13 (0.43, 2.96) | 0.8 |
| Farming in origin country, Yes vs. No | 5.30 (2.38, 11.81) | <0.001 | 4.49 (1.73, 11.62) | <0.002 |
| Cane Cutter, Yes vs. No | 1.07 (0.36, 3.18) | 0.90 | 0.45 (0.14, 1.43) | 0.18 |
| Cotton/Corn, Yes vs. No | 4.33 (1.97, 9.52) | <0.001 | 5.29 (1.96, 14.25) | 0.001 |

| Characteristic | Crude model | | Model adjusting for age and sex* | |
|---|---|---|---|---|
| | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Animals, Yes vs. No | 2.57 (1.06, 6.27) | 0.04 | 2.00 (0.70, 5.66) | 0.19 |
| Other produce, Yes vs. No | 1.56 (0.72, 3.41) | 0.26 | 1.58 (0.61, 4.07) | 0.34 |
| Lived in another U.S. city, Yes vs. No | 1.04 (0.46, 2.32) | 0.93 | 0.86 (0.33, 2.22) | 0.75 |
| Country of origin - climate hot, Yes vs. No | 1.62 (0.74, 3.55) | 0.23 | 1.19 (0.46, 3.03) | 0.72 |
| Hydrates while working, Yes vs. No | 1.62 (0.56, 4.73) | 0.38 | 0.39 (0.08, 1.82) | 0.23 |
| Drank well water at work or home, Yes vs. No | 4.70 (2.13, 10.38) | <0.001 | 5.08 (1.91, 13.53) | <0.001 |
| Drank piped water at work or home, Yes vs. No | 0.50 (0.18, 1.43) | 0.2 | 0.68 (0.20, 2.30) | 0.54 |
| Drank bottled water at work or home, Yes vs. No | 0.83 (0.36, 1.92) | 0.67 | 0.48 (0.16, 1.38) | 0.17 |
| Drank river/spring water at work or home, Yes vs. No | 0.64 (0.20, 2.04) | 0.45 | 0.70 (0.18, 2.74) | 0.61 |
| Personal protective equipment, Yes vs. No | n/a | n/a | n/a | n/a |
| Exposure to any agent, Yes vs. No | 8.48 (3.53, 20.38) | <0.001 | 4.86 (1.82, 12.96) | 0.002 |
| Exposure to any agent (adjusted for personal protective equipment) , Yes vs. No | 6.68 (2.80, 15.94) | <0.001 | 3.99 (1.50, 10.62) | 0.006 |
| Exposure to paraquat, Yes vs. No | 22.84 (2.89, 180.68) | <0.001 | 12.25 (1.51, 99.36) | 0.02 |
| Exposure to paraquat (adjusted for personal protective equipment) , Yes vs. No | 22.84 (2.89, 180.68) | <0.001 | 12.25 (1.51, 99.36) | 0.02 |
| Exposure to multiple agents, Yes vs. No | 3.11 (0.76, 12.70) | 0.11 | 1.69 (0.39, 7.35) | 0.48 |
| Exposure to multiple agents (adjusted for personal protective equipment) , Yes vs. No | 3.11 (0.76, 12.70) | 0.11 | 1.69 (0.39, 7.35) | 0.48 |
| Exposure to unspecified agents, Yes vs. No | 2.67 (1.06, 6.69) | 0.04 | 1.55 (0.56, 4.34) | 0.4 |
| Exposure to unspecified agents (adjusted for personal protective equipment) , Yes vs. No | 2.00 (0.78, 5.14) | 0.15 | 1.23 (0.43, 3.55) | 0.70 |
| Exposure to other agent, Yes vs. No | 5.55 (1.12, 27.39) | 0.036 | 3.21 (0.61, 16.80) | 0.17 |
| Exposure to other agent (adjusted for personal protective equipment) , Yes vs. No | 5.55 (1.12, 27.39) | 0.036 | 3.21 (0.61, 16.80) | 0.17 |
| Rodent/bird, Yes vs. No | 8.14 (2.99, 22.19) | <0.001 | 8.52 (2.51, 28.93) | <0.001 |
| Insect bites, Yes vs. No | 6.05 (2.69, 13.61) | <0.001 | 4.09 (1.62, 10.34) | 0.003 |

*ORs for age and sex were from the model adjusting each other. ORs for other covariates were from the model adjusting for age and sex.

**Supplemental Table 2B.**
Odds ratios from crude model and model adjusting for age and sex among farm workers in original country.

| | Crude model | | Model adjusting for age and sex* | |
|---|---|---|---|---|
| | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Age contribution, 1 year | 0.95 (0.90, 1.00) | 0.05 | 0.96 (0.91, 1.01) | 0.15 |
| Contribution of age when moved to US, 1 year | 0.98 (0.93, 1.03) | 0.37 | 1.01 (0.94, 1.09) | 0.74 |
| Contribution of Farming while in US, 1 year | 1.10 (0.47, 2.53) | 0.83 | 0.99 (0.43, 2.29) | 0.97 |
| Contribution of Construction work while in US, 1 year | 0.95 (0.86, 1.05) | 0.28 | 0.93 (0.83, 1.05) | 0.25 |
| Contribution of Landscaping work while in US, 1 year | 1.31 (0.92, 1.86) | 0.14 | 1.17 (0.85, 1.62) | 0.33 |
| Duration (years) farming in origin country, 1 year* | 0.99 (0.93, 1.05) | 0.64 | 1.02 (0.94, 1.11) | 0.62 |
| agrochemical exposure, 1 year* | 1.30 (1.08, 1.55) | 0.005 | 1.25 (1.04, 1.50) | 0.02 |
| Years in Houston, 1 year | 0.97 (0.91, 1.03) | 0.34 | 1.01 (0.94, 1.10) | 0.75 |
| Gender, men vs. women | 15.43 (1.70, 139.96) | 0.02 | 11.98 (1.28, 112.01) | 0.03 |
| Origin country locale, village/farm vs. city | 0.71 (0.13, 4.05) | 0.7 | 1.50 (0.23, 9.71) | 0.7 |
| High school/College vs. some school* | 0.35 (0.07, 1.77) | | 0.33 (0.06, 1.85) | |
| Literate, Yes vs. No | 2.00 (0.36, 10.98) | | 1.27 (0.17, 9.55) | |
| ESL, Yes vs. No | 0.93 (0.24, 3.67) | | 0.64 (0.15, 2.76) | |
| First degree relative with renal dx, Y vs. N | 6.11 (0.71, 52.25) | 0.10 | 11.68 (0.81, 167.98) | 0.1 |
| Diabetes mellitus, Yes vs. No | n/a | n/a | n/a | n/a |
| Hypertension, Yes vs. No | n/a | n/a | n/a | n/a |
| Herb/alternative medication use, Yes vs. No | 6.14 (1.24, 30.44) | 0.03 | 5.46 (0.96, 30.99) | 0.06 |
| Analgesic use, Yes vs. No | 1.09 (0.09, 12.77) | 0.95 | 0.48 (0.04, 6.39) | 0.58 |
| NSAID use, Yes vs. No | 1.41 (0.25, 8.00) | 0.92 | 1.60 (0.23, 11.04) | 0.78 |
| Drug allergies, Yes vs. No | 0.93 (0.24, 3.67) | 0.92 | 2.13 (0.37, 12.25) | 0.4 |
| Currently employed, Yes vs. No | 1.13 (0.36, 3.51) | | 0.61 (0.16, 2.28) | |
| Farming while in US, Yes vs. No | 1.09 (0.09, 12.77) | 0.95 | 0.86 (0.07, 10.52) | 0.91 |
| Construction work while in US, Yes vs. No | 1.47 (0.49, 4.38) | 0.49 | 0.79 (0.22, 2.87) | 0.72 |
| Landscaping work while in US, Yes vs. No | 1.58 (0.51, 4.86) | 0.43 | 0.69 (0.18, 2.57) | 0.58 |
| Farming in origin country, Yes vs. No | n/a | n/a | n/a | n/a |
| Cane Cutter, Yes vs. No | 0.35 (0.10, 1.18) | 0.09 | 0.13 (0.03, 0.57) | 0.007 |
| Cotton/Corn, Yes vs. No | 1.60 (0.38, 6.79) | 0.52 | 3.17 (0.65, 15.49) | 0.15 |
| Animals, Yes vs. No | 0.85 (0.29, 2.53) | 0.77 | 0.60 (0.16, 2.23) | 0.44 |

| | Crude model | | Model adjusting for age and sex* | |
|---|---|---|---|---|
| | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Other produce, Yes vs. No | 0.24 (0.07, 0.84) | 0.03 | 0.32 (0.08, 1.23) | 0.10 |
| Lived in another U.S. city, Yes vs. No | 0.63 (0.19, 2.07) | 0.45 | 0.41 (0.11, 1.52) | 0.18 |
| Country of origin - climate hot, Yes vs. No | 1.27 (0.40, 4.05) | 0.68 | 0.63 (0.14, 2.74) | 0.54 |
| Hydrates while working, Yes vs. No | 0.43 (0.05, 4.17) | 0.47 | 0.17 (0.01, 2.73) | 0.21 |
| Drank well water at work or home, Yes vs. No | 4.23 (1.22, 14.62) | 0.02 | 5.40 (1.24, 23.59) | 0.03 |
| Drank piped water at work or home, Yes vs. No | 0.50 (0.09, 2.74) | 0.43 | 0.68 (0.09, 5.22) | 0.71 |
| Drank bottled water at work or home, Yes vs. No | 1.68 (0.16, 17.25) | 0.66 | 0.83 (0.07, 9.50) | 0.88 |
| Drank river/spring water at work or home, Yes vs. No | 0.29 (0.08, 1.08) | 0.07 | 0.35 (0.07, 1.63) | 0.18 |
| Personal protective equipment, Yes vs. No | n/a | n/a | n/a | n/a |
| Exposure to any agent, Yes vs. No | 5.24 (1.57, 17.48) | 0.007 | 2.64 (0.62, 11.25) | 0.19 |
| Exposure to any agent (adjusted for personal protective equipment) , Yes vs. No | 4.43 (1.36, 14.40) | 0.01 | 2.17 (0.53, 8.93) | 0.28 |
| Exposure to paraquat, Yes vs. No | 11.56 (1.39, 96.12) | 0.02 | 7.70 (0.90, 66.22) | 0.06 |
| Exposure to paraquat (adjusted for personal protective equipment) , Yes vs. No | 11.56 (1.39, 96.12) | 0.02 | 7.70 (0.90, 66.22) | 0.06 |
| Exposure to multiple agents, Yes vs. No | 1.32 (0.30, 5.79) | 0.71 | 0.85 (0.18, 3.97) | 0.83 |
| Exposure to multiple agents (adjusted for personal protective equipment) , Yes vs. No | 1.32 (0.30, 5.79) | 0.71 | 0.85 (0.18, 3.97) | 0.83 |
| Exposure to unspecified agents, Yes vs. No | 0.91 (0.30, 2.78) | 0.87 | 0.49 (0.14, 1.75) | 0.27 |
| Exposure to unspecified agents (adjusted for personal protective equipment) , Yes vs. No | 0.81 (0.26, 2.49) | 0.72 | 0.43 (0.12, 1.56) | 0.20 |
| Exposure to other agent, Yes vs. No | 2.48 (0.47, 13.02) | 0.28 | 1.69 (0.31, 9.35) | 0.55 |
| Exposure to other agent (adjusted for personal protective equipment) , Yes vs. No | 2.48 (0.47, 13.02) | 0.28 | 1.69 (0.31, 9.35) | 0.55 |
| Rodent/bird, Yes vs. No | 7.44 (1.85, 29.83) | 0.005 | 5.05 (1.17, 21.75) | 0.03 |
| Insect bites, Yes vs. No | 4.67 (1.45, 15.01) | 0.01 | 3.12 (0.85, 11.41) | 0.09 |

**Supplemental Table 3A**. Odds ratios from logistic regression models characterizing relationship between agrochemical exposure and kidney failure from Mesoamerican nephropathy.

| Agrochemical exposure | Model 1 | | Model 2 | | Model 3a | | Model 3b | | Model 3c | |
|---|---|---|---|---|---|---|---|---|---|---|
| | OR (95% CI) | P-value | OR (95% CI) | P-value | OR (95% CI) | P-value | OR (95% CI) | P-value | OR (95% CI) | P-value |
| Agrochemical exposure years, 1 year | 1.39 (1.18, 1.64) | <0.001 | 1.33 (1.12, 1.58) | 0.001 | 1.23 (1.04, 1.44) | 0.02 | 1.26 (1.04, 1.52) | 0.02 | 1.25 (1.04, 1.49) | 0.015 |
| Exposure to any agent, Yes vs. No | 8.48 (3.53, 20.38) | <0.001 | 4.86 (1.82, 12.96) | 0.002 | 1.60 (0.47, 5.46) | 0.45 | 2.07 (0.53, 8.03) | 0.3 | 1.25 (0.29, 5.36) | 0.76 |
| Exposure to any agent without personal protective equipment, Yes vs. No | 6.68 (2.80, 15.94) | <0.001 | 3.99 (1.50, 10.62) | 0.006 | 1.11 (0.31, 3.92) | 0.87 | 1.15 (0.24, 5.55) | 0.9 | 0.54 (0.09, 3.11) | 0.5 |
| Exposure to paraquat, Yes vs. No | 22.84 (2.89, 180.68) | 0.003 | 12.25 (1.51, 99.36) | 0.02 | 4.14 (0.43, 39.46) | 0.22 | 4.78 (0.52, 43.83) | 0.17 | 4.92 (0.53, 45.25) | 0.16 |
| Exposure to paraquat without personal protective equipment, Yes vs. No | 22.84 (2.89, 180.68) | 0.003 | 12.25 (1.51, 99.36) | 0.02 | 4.14 (0.43, 39.46) | 0.22 | 4.78 (0.52, 43.83) | 0.17 | 4.92 (0.53, 45.25) | 0.16 |
| Exposure to multiple agents, Yes vs. No | 3.11 (0.76, 12.70) | 0.11 | 1.69 (0.39, 7.35) | 0.5 | 0.35 (0.06, 2.23) | 0.27 | 0.71 (0.13, 3.76) | 0.69 | 0.39 (0.06, 2.37) | 0.3 |
| Exposure to multiple agents without personal protective equipment, Yes vs. No | 3.11 (0.76, 12.70) | 0.11 | 1.69 0.39, 7.35) | 0.5 | 0.35 (0.06, 2.23) | 0.27 | 0.71 (0.13, 3.76) | 0.69 | 0.39 (0.06, 2.37) | 0.3 |
| Exposure to unspecified agents, Yes vs. No | 2.67 (1.06, 6.69) | 0.04 | 1.55 (0.56, 4.34) | 0.4 | 0.78 (0.24, 2.52) | 0.68 | 0.76 (0.22, 2.65) | 0.67 | 0.43 (0.11, 1.69) | 0.2 |
| Exposure to unspecified agents without personal protective equipment, Yes vs. No | 2.00 (0.78, 5.14) | 0.15 | 1.23 (0.43, 3.55) | 0.7 | 0.53 (0.15, 1.84) | 0.32 | 0.33 (0.07, 1.53) | 0.16 | 0.15 (0.03, 0.84) | 0.03 |
| Exposure to other agent, Yes vs. No | 5.55 (1.12, 27.39) | 0.04 | 3.21 (0.61, 16.80) | 0.17 | 0.91 (0.13, 6.31) | 0.9 | 1.57 (0.26, 9.66) | 0.62 | 0.97 (0.14, 6.47) | 0.97 |
| Exposure to other agent without personal protective equipment, Yes vs. No | 5.55 (1.12, 27.39) | 0.04 | 3.21 (0.61, 16.80) | 0.17 | 0.91 (0.13, 6.31) | 0.9 | 1.57 (0.26, 9.66) | 0.62 | 0.97 (0.14, 6.47) | 0.97 |

Model 1. Crude model.

Model 2. Model adjusting for age and sex.

Model 3a. Model adjusting for age, sex, rodent/bird, and drinking well water.

Model 3b. Model adjusting for age, sex, drinking well water, and cotton/corn.

Model 3c. Model adjusting for age, sex, rodent/bird, and cotton/corn.

**Supplemental Table 3B.** Non-agrochemical covariates with Mesoamerican nephropathy-kidney failure showing odds ratios from model adjusted for agrochemical exposure duration.

| | Model 3a | | Model 3b | | Model 3c | |
|---|---|---|---|---|---|---|
| Covariate | OR (95% CI) | p-value | OR (95% CI) | p-value | OR (95% CI) | p-value |
| Agrochemical exposure years, 1 year | 1.23 (1.04, 1.44) | 0.01 | 1.26 (1.04, 1.52) | 0.017 | 1.25 (1.04, 1.49) | 0.015 |
| Age, 1 year | 0.93 (0.88, 0.98) | 0.008 | 0.93 (0.88, 0.98) | 0.004 | 0.93 (0.89, 0.98) | 0.009 |
| Gender, men vs. women | 11.73 (2.13, 64.63) | 0.005 | 9.60 (1.97, 46.82) | 0.006 | 13.11 (2.31, 74.42) | 0.004 |
| Rodent/bird, Yes vs. No | 4.81 (1.27, 18.29) | 0.022 | n/a | n/a | 5.06 (1.31, 19.53) | 0.019 |
| Drank well water at work or home | 1.78 (0.54, 5.87) | 0.34 | 2.00 (0.60, 6.70) | 0.26 | n/a | n/a |
| Cotton/Corn | n/a | n/a | 1.31 (0.35, 4.83) | 0.68 | 1.18 (0.31, 4.50) | 0.8 |

## Supplemental Table 4

Characteristics among Mesoamerican nephropathy-kidney failure patients and matched healthy controls.

| Characteristics | value | Mesoamerican nephropathy-kidney failure (N=16) | Matched controls (N=16) |
|---|---|---|---|
| Age | median(interquartile range) | 37.5 (34.0,45.5) | 39.0 (33.0,44.5) |
| | range | 26 - 60 | 24 - 57 |
| Age when moved to US | median(interquartile range) | 22.5 (16.5,30.5) | 25.0 (18.0,28.0) |
| | [N of missing] | 0 | 1 |
| | range | 8 - 37 | 13 - 37 |
| US-Farming years | median(interquartile range) | 0 (0,0) | 0 (0,0) |
| | range | 0 - 0 | 0 - 11 |
| US-Construction years | median(interquartile range) | 0.1 (0.0,2.5) | 0.0 (0.0,2.5) |
| | range | 0 - 10 | 0 - 24 |
| US-Landscaping years | median(interquartile range) | 0.0 (0.0,3.5) | 0.0 (0.0,0.0) |
| | range | 0 - 8 | 0 - 10 |
| Duration (years) farming in origin country | median(interquartile range) | 9.0 (2.5,13.0) | 7.5 (4.5,16.0) |
| | range | 0 - 28 | 0 - 20 |
| Agrochemical exposure duration | median(interquartile range) | 6.5 (0.0,11.0) | 1.4 (0.0,10.0) |
| | range | 0 - 23 | 0 - 20 |
| Agrochemical exposure episodes | median(interquartile range) | 13.0 (0.0,172.0) | 3.8 (0.0,45.5) |
| | range | 0 - 936 | 0 - 624 |
| Elevation (m) | median(interquartile range) | 171.0 (102.0,1713.5) | 180.5 (116.0,1867.0) |
| | range | 0 - 2075 | 0 - 2075 |
| | [N of missing] | 0 | 4 |
| Years in Houston | median(interquartile range) | 12.0 (9.0,19.0) | 10.0 (3.5,20.0) |
| | range | 5 - 30 | 0 - 30 |
| Gender | Male | 16 (100.0) | 16 (100.0) |
| Origin country locale | City | 3 (18.8) | 1 (6.3) |
| | Village/farm | 13 (81.3) | 15 (93.8) |
| Highest education achieved | Some school | 14 (93.3) | 9 (56.3) |
| | High school | 1 (6.7) | 5 (31.3) |
| | College | 0 (0.0) | 2 (12.5) |
| | [N of missing] | 1 | 0 |
| High school/College | No | 14 (93.3) | 9 (56.3) |
| | Yes | 1 (6.7) | 7 (43.8) |
| | [N of missing] | 1 | 0 |
| Literate | No | 1 (6.3) | 1 (6.3) |
| | Yes | 15 (93.8) | 15 (93.8) |
| English as Second Language | No | 12 (75.0) | 10 (62.5) |
| | Yes | 4 (25.0) | 6 (37.5) |
| First degree relative with renal dx | No | 12 (75.0) | 7 (43.8) |
| | Yes | 4 (25.0) | 9 (56.3) |
| Diabetes mellitus | No | 16 (100.0) | 15 (93.8) |
| | Yes | 0 (0.0) | 1 (6.3) |
| Hypertension | No | 16 (100.0) | 14 (87.5) |
| | Yes | 0 (0.0) | 2 (12.5) |
| Herb/alternative medication use | No | 14 (87.5) | 15 (93.8) |
| | Yes | 2 (12.5) | 1 (6.3) |

| Characteristics | value | Mesoamerican nephropathy-kidney failure (N=16) | Matched controls (N=16) |
|---|---|---|---|
| Analgesic use | No | 7 (43.8) | 14 (87.5) |
| | Yes | 9 (56.3) | 2 (12.5) |
| NSAID use | No | 12 (75.0) | 15 (93.8) |
| | Yes | 4 (25.0) | 1 (6.3) |
| Drug allergies | No | 14 (87.5) | 15 (93.8) |
| | Yes | 2 (12.5) | 1 (6.3) |
| Currently employed | No | 9 (56.3) | 1 (6.3) |
| | Yes | 7 (43.8) | 15 (93.8) |
| US Farming | No | 16 (100.0) | 14 (87.5) |
| | Yes | 0 (0.0) | 2 (12.5) |
| US Construction | No | 7 (43.8) | 9 (56.3) |
| | Yes | 9 (56.3) | 7 (43.8) |
| US Landscaping | No | 9 (56.3) | 13 (81.3) |
| | Yes | 7 (43.8) | 3 (18.8) |
| Farming in origin country | No | 1 (6.3) | 1 (6.3) |
| | Yes | 15 (93.8) | 15 (93.8) |
| Cane Cutter | No | 12 (75.0) | 13 (81.3) |
| | Yes | 4 (25.0) | 3 (18.8) |
| Cotton | No | 13 (81.3) | 15 (93.8) |
| | Yes | 3 (18.8) | 1 (6.3) |
| Corn | No | 3 (18.8) | 2 (12.5) |
| | Yes | 13 (81.3) | 14 (87.5) |
| Animals | No | 6 (37.5) | 7 (43.8) |
| | Yes | 10 (62.5) | 9 (56.3) |
| Other produce | No | 9 (56.3) | 6 (37.5) |
| | Yes | 7 (43.8) | 10 (62.5) |
| Lived in another U.S. city | No | 13 (81.3) | 0 (0.0) |
| | Yes | 3 (18.8) | 16 (100.0) |
| Country of origin - climate hot | No | 2 (12.5) | 1 (6.3) |
| | Yes | 14 (87.5) | 15 (93.8) |
| Hydrates while working | No | 3 (18.8) | 0 (0.0) |
| | Yes | 13 (81.3) | 16 (100.0) |
| Drank well water at work or home | No | 2 (12.5) | 2 (12.5) |
| | Yes | 14 (87.5) | 14 (87.5) |
| Drank piped water at work or home | No | 16 (100.0) | 15 (93.8) |
| | Yes | 0 (0.0) | 1 (6.3) |
| Drank bottled water at work or home | No | 14 (87.5) | 14 (87.5) |
| | Yes | 2 (12.5) | 2 (12.5) |
| Drank river/spring water at work or home | No | 13 (81.3) | 14 (87.5) |
| | Yes | 3 (18.8) | 2 (12.5) |
| Personal protective equipment | No | 16 (100.0) | 8 (50.0) |
| | Yes | 0 (0.0) | 8 (50.0) |
| Exposure to any agent | No | 4 (25.0) | 7 (43.8) |
| | Yes | 12 (75.0) | 9 (56.3) |
| Exposure to any agent (adjusted for personal protective equipment) | No | 4 (25.0) | 15 (93.8) |
| | Yes | 12 (75.0) | 1 (6.3) |
| Exposure to paraquat | No | 7 (43.8) | 9 (56.3) |

| Characteristics | value | Mesoamerican nephropathy-kidney failure (N=16) | Matched controls (N=16) |
|---|---|---|---|
| | Yes | 9 (56.3) | 7 (43.8) |
| Exposure to paraquat | No | 7 (43.8) | 15 (93.8) |
| (adjusted for personal protective equipment) | Yes | 9 (56.3) | 1 (6.3) |
| Exposure to multiple agents | No | 12 (75.0) | 10 (62.5) |
| | Yes | 4 (25.0) | 6 (37.5) |
| Exposure to multiple | No | 12 (75.0) | 16 (100.0) |
| agents (adjusted for personal protective equipment) | Yes | 4 (25.0) | 0 (0.0) |
| Exposure to unspecified agents | No | 13 (81.3) | 15 (93.8) |
| | Yes | 3 (18.8) | 1 (6.3) |
| Exposure to unspecified | No | 13 (81.3) | 16 (100.0) |
| agents (adjusted for personal protective equipment) | Yes | 3 (18.8) | 0 (0.0) |
| Exposure to other agent | No | 12 (75.0) | 10 (62.5) |
| | Yes | 4 (25.0) | 6 (37.5) |
| Exposure to other agent | No | 12 (75.0) | 16 (100.0) |
| (adjusted for personal protective equipment) | Yes | 4 (25.0) | 0 (0.0) |
| Rodent/bird | No | 6 (37.5) | 5 (31.3) |
| | Yes | 10 (62.5) | 11 (68.8) |
| Insect bites | No | 4 (25.0) | 5 (31.3) |
| | Yes | 12 (75.0) | 11 (68.8) |

## Supplemental Table 5

Differences of continuous characteristics between Mesoamerican nephropathy-kidney failure and healthy controls in matched pairs.

| | (N=16) | | |
|---|---|---|---|
| Characteristics | Median (Inter-quartile range) | Range | P-value from Wilcoxon signed rank test |
| Age | 1.5 (-4.0, 4.5) | -19 , 10 | 0.7 |
| Age when moved to US | 0.0 (-8.0, 6.0) | -20 , 17 | 0.9 |
| US-Farming years | 0.0 (0.0, 0.0) | -11 , 0 | 0.5 |
| US-Construction years | 0.0 (-1.0, 2.5) | -24 , 8 | 0.53 |
| US-Landscaping years | 0.0 (0.0, 0.7) | -8 , 8 | 0.52 |
| Duration (years) farming in origin country | -1.8 (-7.0, 6.0) | -18 , 22 | 0.72 |
| Agrochemical exposure period | 0.0 (-1.5, 10.5) | -19 , 17 | 0.56 |
| Agrochemical exposure episodes | 0.0 (-6.8, 74.0) | -464 , 936 | 0.47 |
| Years in Houston | 0.5 (-4.5, 9.5) | -8 , 11 | 0.17 |

Difference on age when moved to US was missing in one pair.

## Supplemental Table 6

Matched pairs with discordant categorical characteristics among Mesoamerican nephropathy-kidney failure and matched controls.

| | Number of discordant pairs (N=16) | | |
|---|---|---|---|
| Characteristics | Yes only in Mesoamerican nephropathy-kidney failure | Yes only in control | Exact p-value from McNemar's test |
| Origin country locale in village/farm | 1 | 3 | 0.63 |
| High school/college | 0 | 5 | |
| literate | 1 | 1 | |
| ESL | 0 | 2 | |
| First degree relative with renal dx | 1 | 6 | 0.13 |
| Diabetes mellitus | 0 | 1 | |
| Hypertension | 0 | 2 | |
| Herb/alternative medication use | 2 | 1 | 1 |
| Analgesic use | 9 | 2 | 0.07 |
| NSAID use | 4 | 1 | 0.4 |
| Drug allergies use | 1 | 0 | 1 |
| Currently employed | 1 | 9 | |
| US Farming | 0 | 2 | 0.5 |
| US Construction | 5 | 3 | 0.73 |
| US Landscaping | 4 | 0 | 0.13 |
| Farming in origin country | 1 | 1 | 1 |
| Cane Cutter | 2 | 1 | 1 |
| Cotton | 2 | 0 | 0.5 |
| Corn | 1 | 2 | 1 |
| Animals | 3 | 2 | 1 |
| Other produce | 2 | 5 | 0.5 |
| Lived in another U.S. city | 0 | 13 | <0.001 |
| Country of origin - climate hot | 0 | 1 | 1 |
| Hydrates while working | 0 | 3 | 0.25 |
| Drank well water at work or home | 1 | 1 | 1 |
| Drank piped water at work or home | 0 | 1 | 1 |
| Drank bottled water at work or home | 1 | 1 | 1 |
| Drank river/spring water at work or home | 3 | 2 | 1 |
| Personal protective equipment | 0 | 8 | 0.008 |
| Exposure to any agent | 4 | 1 | 0.38 |
| Exposure to any agent (adjusted for personal protective equipment) | 12 | 1 | 0.001 |
| Exposure to paraquat | 3 | 1 | 0.63 |
| Exposure to paraquat (adjusted for personal protective equipment) | 9 | 1 | 0.008 |
| Exposure to multiple agents | 1 | 3 | 0.63 |

| Characteristics | Number of discordant pairs (N=16) | | Exact p-value from McNemar's test |
|---|---|---|---|
| | Yes only in Mesoamerican nephropathy-kidney failure | Yes only in control | |
| Exposure to multiple agents (adjusted for personal protective equipment) | 4 | 0 | 0.13 |
| Exposure to unspecified agents | 3 | 1 | 0.63 |
| Exposure to unspecified agents (adjusted for personal protective equipment) | 3 | 0 | 0.25 |
| Exposure to other agent | 0 | 2 | 0.5 |
| Exposure to other agent (adjusted for personal protective equipment) | 4 | 0 | 0.13 |
| Rodent/bird | 2 | 3 | 1 |
| Insect bites | 3 | 2 | 1 |

**Survey for Dialysis Patients**

Patient MRN number_____

**Demographics**:

Age _____ Gender _____ Home Country _____

Years of education_____Knows how to read: Yes/No Knows English: Yes/No

**Immigration History/Motivation**

At what age did you leave your home country?_____

Did you live in any other countries besides your home country and the U.S.? If yes, list countries and number of years in each country

_____

_____

_____

_____

At what age did you move to the U.S.? _____

What was your motivation for moving to the U.S? job family
other _____

How many years did you live in the U.S. before initiating dialysis? _____

What was your age when you began dialysis?_____

How many years have you been in Houston (round to nearest year)? _____

What was your motivation for moving to Houston? job family
other _____

Have you lived in another city in the USA besides Houston? Yes No

If yes, which ones and for how long (nearest number of years):

_____
_____
_____
_____

Motivation for living in that city? job family other

_____

**Kidney Disease Information:**

Did you know about your kidney disease before starting dialysis? Yes
No

If yes, for how long (number of years)?_____

Did you see a primary care doctor before starting dialysis? Yes
No

Did you see a kidney doctor at least 4 months before starting dialysis? Yes
No

Does/Did anyone in your family have kidney disease? Yes No

If yes, who? Age of onset? Related with diabetes or other disease process?

_____
_____
_____
_____

Is anyone in your family on dialysis? Yes
No

If yes, at what age did they start dialysis?_____

Did they have a known disease causing renal failure? If yes, which one?_____

Do any of your friends/coworkers have kidney disease? Yes
No

If yes, how many?_____

Were those friends living in the United States or home country when they developed kidney disease?

United States Home Country Other

Name of hospital/facility where you receive dialysis most frequently? _____

Name of hospitals/facilities where you receive dialysis sporadically both in the United States and abroad? _____

_____

_____

_____

General Health:

Known diseases:

_____

_____

_____

_____

_____

_____

Known diseases prior to dialysis:

_____

_____

_____

_____

_____

_____

Medication use prior to dialysis? (ask specifically about diabetes treatments, hypertension treatments, herbs/alternative medicines and pain medication use, include names if possible)

_____

_____

_____

_____

_____

_____

_____

_____

Known drug allergies:

_____

_____

_____

_____

_____

_____

**Work History**

Do you currently work? Yes No

If yes, what type of work? _____

For how long? _____

If, no how much time since you have stopped working?

_____

Reason for stopping work _____

Who is supporting you? Family Other

_____

Types of job in the US:

Farming Yes, Number of years No

Construction/Painting (years) Yes, Number of years No

Landscaping Yes, Number of years No

Other Yes, Number of years No

Below please list each job and number of years

_____

_____

_____

_____

_____
_____
_____
_____
_____
_____

Types of jobs before coming to US and duration:

| | |
|---|---|
| Farming | Yes, Number of years____No<br>In which country<br>_____ |
| Construction/Painting (years) | Yes, Number of years____No<br>In which country<br>_____ |
| Landscaping | Yes, Number of years____No<br>In which country<br>_____ |
| Other | Yes, Number of years____No<br>In which country<br>_____ |

Below please list each job and number of years

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Have you worked in agriculture? Yes No

Number of years? _____

If yes, what type: Cane cutter Cotton farm Corn farm

Animal farmer Other

:_____

_____

_____

_____

_____

Possible Exposures:

Rodents and birds Yes No

Insect bites Yes No

Pesticides, Herbicides, or Chemicals: Yes No

If yes, what are the names and how were they used (was PPE/post-washing utilized):

_____

_____

_____

_____

For how long were you exposed (number of years):

_____

How often were you exposed (times/week, weeks/year, and number of years):_____

Are you able to hydrate while at work? Yes No

What do you most commonly drink while working? Water Soda

Flavored Water Juice

If water, what is the source? Piped water Well River/Spring

Bottled Water Other

_____

_____

What type of food did you eat while working? If includes fruits, vegetables, or locally produced grains, where was the food collected? Was it near farmland? Is this food different than the food that other family members consume? Is this the same food that you eat at home?

Living Conditions:

Living location in native country: City Village/Farm

Home country climate: Hot Cool

Home country living location: Close to Ocean Mountains
Valley Other

Drinking water source at home: Piped water Well River/Spring
Bottled Water Other

What type of food did you eat while at home? If includes fruits, vegetables, or locally produced grains, where was the food collected? Was it near farmland? Is this food different than the food that other family members consume?

_____
_____

_____
_____

Additional comments from discussion:

_____
_____

_____
_____

_____
_____

_____
_____