SUPPLEMENTAL MATERIAL

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SUPPLEMENTAL FIGURE LEGENDS

Supplemental Figure 1. Deposition of injected hLM-521 in the basement membrane of extra-renal tissues assayed by confocal microscopy. (A) Adrenal glands from P17 and P23 mice either uninjected or injected with hLM-521 once daily starting at P12 for 5 days were stained with antibodies to hLAMA5 (green) and agrin (red) with nuclear counterstaining (blue). At one day after the last injection (P17), both *Lamb2*+/- and *Lamb2*-/- mice showed mainly hLAMA5 staining in the adrenal cortex, which overlapped with the endothelial basement membrane marker agrin (higher magnification of the cortex shown in the top 3 rows). At 7 days after the last injection (P23), the cortical staining for hLAMA5 faded substantially. cap, connective tissue capsule; c, cortex; m, medulla. (B) Brain, pancreas, and jejunum were collected from P17 mice and immunostained as above. Injected hLM-521 was not detected in the endothelial basement membrane of choroid plexus (top row), pancreatic islet (middle row; delineated by the dashed line), or jejunum (bottom row; arrows point to capillaries).

Supplemental Figure 2. Induction of anti-hLM-521 antibodies in mice injected with hLM-521. (A and B) Kidneys collected from P27 mice either uninjected or injected with hLM-521 once daily starting from P12 for 12 days (A) or 7 days (B) were stained with antibodies to mouse IgG (green) and agrin (red) and examined by confocal microscopy after nuclear counterstaining (blue). Uninjected *Lamb2*-/- mice showed weak deposition of mouse IgG in the GBM (middle column in A). After hLM-521 injections, linear mouse IgG was robustly detected in the GBM (right column in A). In *Lamb2-/-; Rag1-/-* mice, the induction and deposition of mouse IgG in the GBM was abolished (B). (C) Human kidney sections were stained with anti-LM-111 antibody (red) and crude serum from P27 *Lamb2*-/- mice either uninjected or injected with hLM-521 once daily for 12 days (green), and examined by confocal microscopy after nuclear counterstaining (blue). The serum of hLM-521-injected *Lamb2*-/- mice contained antibodies that reacted with human GBM and other basement membranes, as well as with the mesangial matrix.

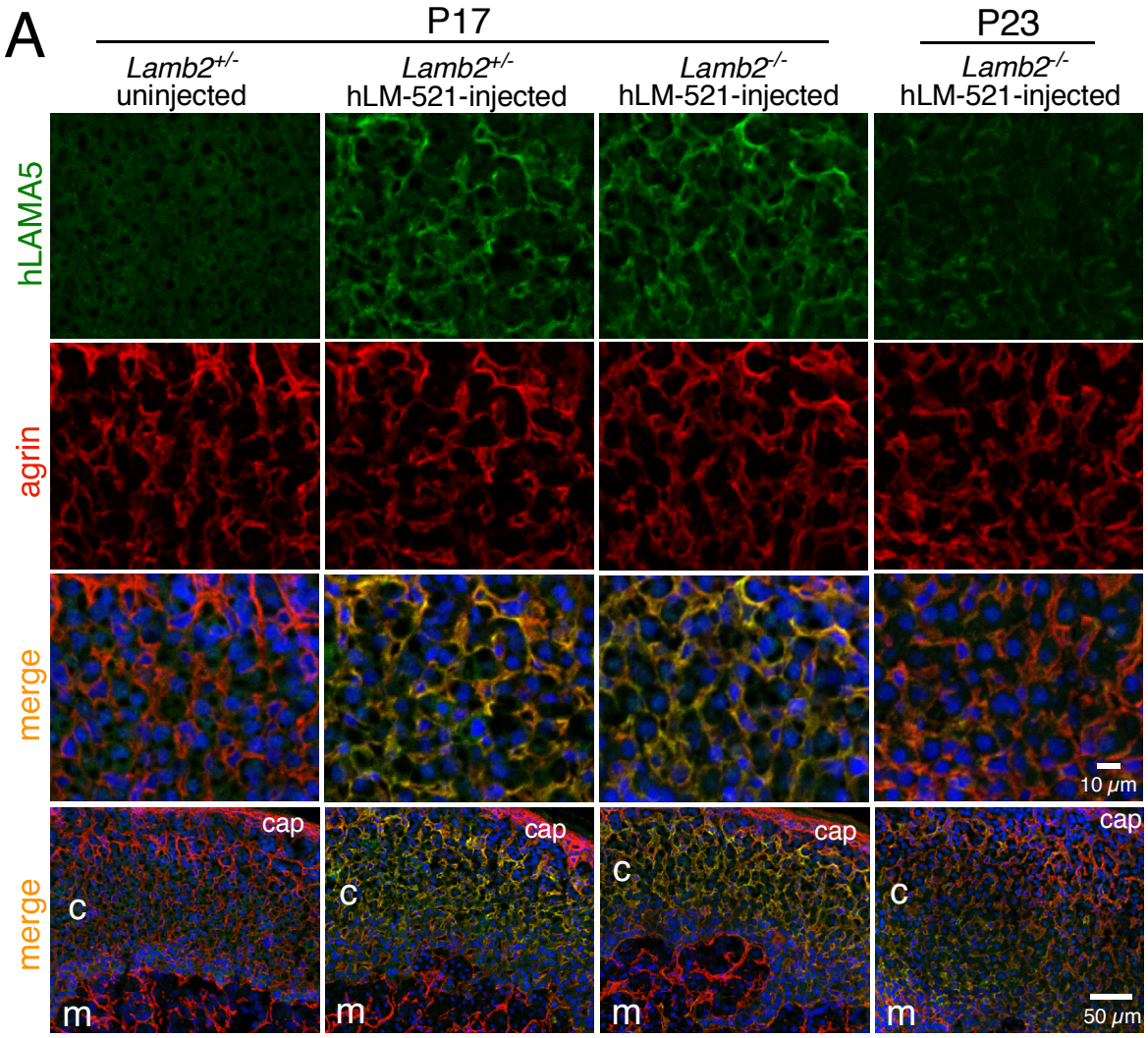
Supplemental Figure 3. Deposition of injected hLM-521 in the GBM of *Lamb2-/-; Rag1-/-* mice assayed by confocal microscopy. Kidneys from P18 mice either uninjected or injected with hLM-521 once daily starting at P11 for 7 days (A), and from P27 mice injected with hLM-521 once daily starting at P11 for 6 days (B) were stained with antibodies to hLAMA5 (green) and agrin (red) with nuclear counterstaining (blue). (A) After 7 doses of hLM-521, *Lamb2-/-; Rag1-/-* mice displayed robust accumulation of hLM-521 in the GBM of all glomeruli that overlapped with the GBM marker agrin (white arrowheads in fourth column). *Lamb2+/-; Rag1-/-* mice showed mostly mesangial staining for hLAMA5 (magenta arrowheads in third column) and weak hLAMA5 staining in the GBM (white arrowheads in third column). Uninjected mice showed no specific LAMA5 signal. Dashed lines demarcate the surface of the kidney. (B) After 11 days of chase, hLM-521 remained in the *Lamb2-/-; Rag1-/-* GBM, even when the mesangial matrix had expanded (asterisks).

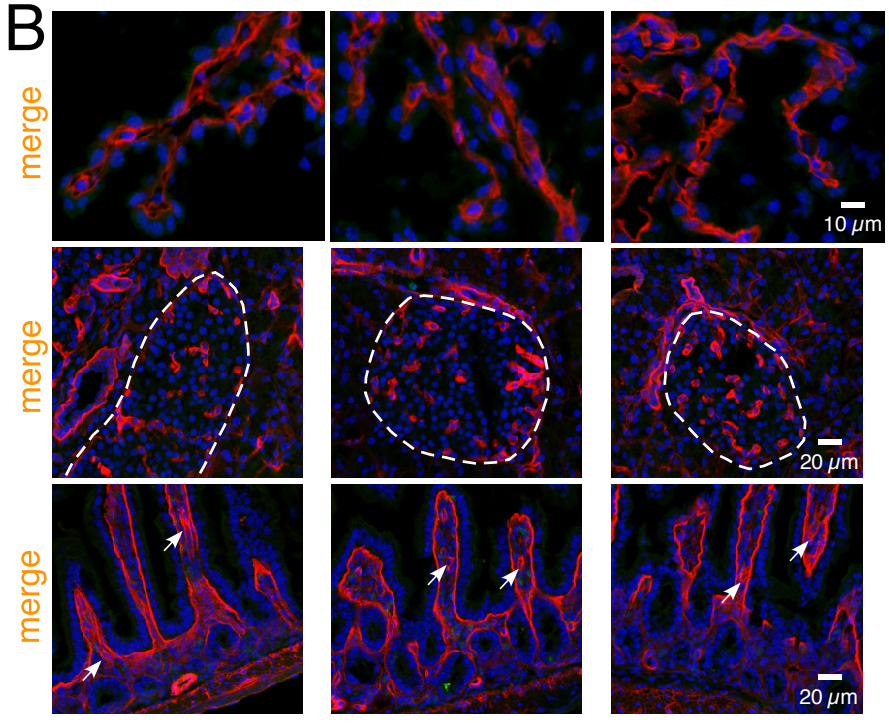
Supplemental Figure 4. Urinary albumin in hLM-521-treated *Lamb2*-/- mice assayed by SDS-PAGE. *Lamb2*-/- mice were untreated or injected with hLM-521 once daily starting at P11 for 6 days, and urine samples were collected at various time points. Urine amounts normalized by creatinine levels were analyzed by SDS-PAGE and stained with Coomassie blue. hLM-521 treatment suppressed progression of albuminuria through P18 in one *Lamb2*-/- mouse (3) and through P20 in the other mouse (2). In contrast, the untreated *Lamb2*-/- mouse progressed to nephrotic range albuminuria at P18. Markers (M) and molecular masses are indicated on the far left. *, albumin bands.

Supplemental Figure 5. Deposition of injected ferritin in kidneys assayed by confocal microscopy. Kidneys from P18 mice either uninjected or injected with ferritin (2 mg/kg) once daily starting at P12 for 6 days were stained with antibodies to ferritin (green) and nidogen (red)

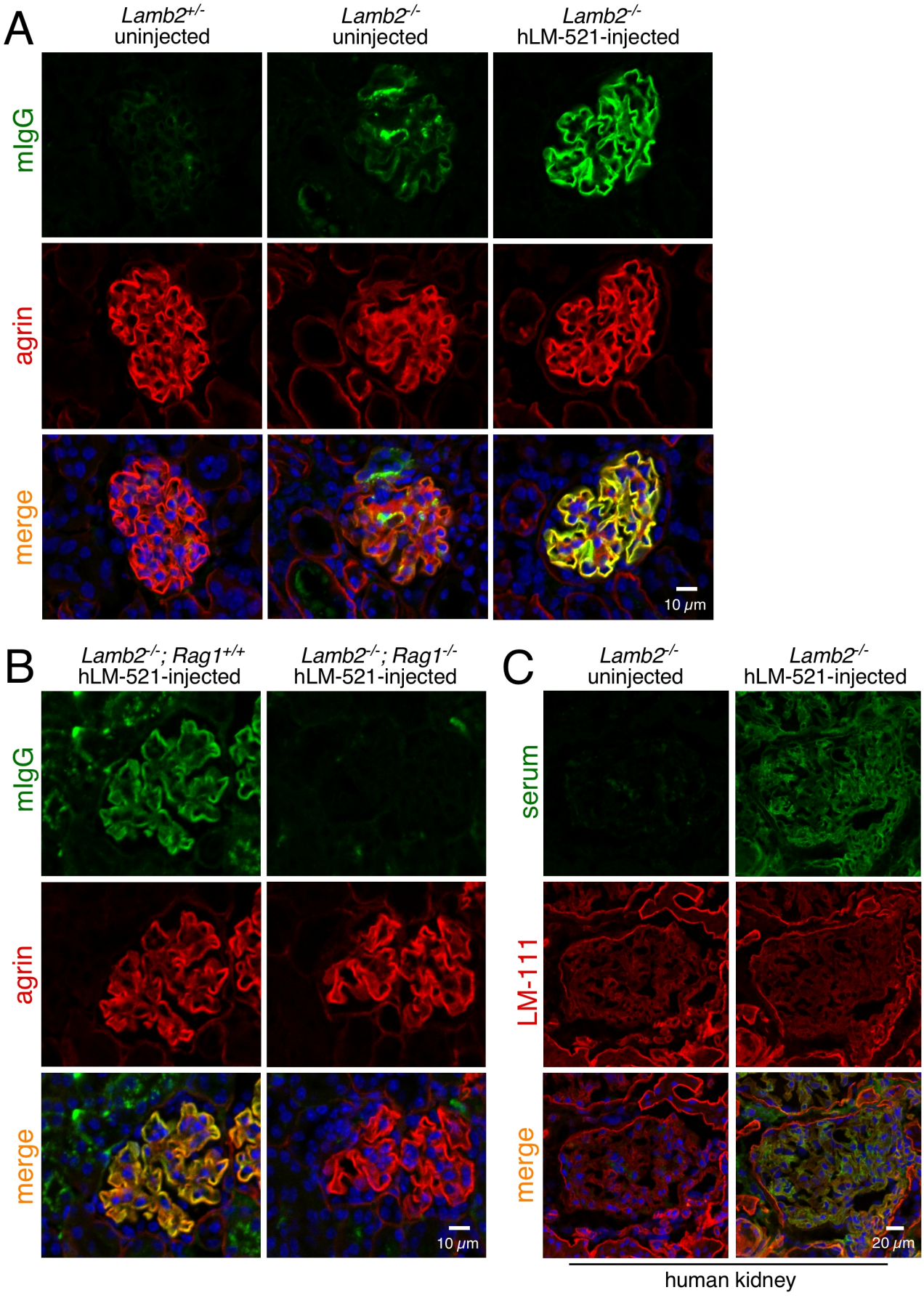
with nuclear counterstaining (blue). Ferritin was not detected in the GBM (marked by nidogen) of injected *Lamb2*+/+ or *Lamb2*-/- mice but was detected in the cytoplasm of some tubular cells (t) of injected mice, with more distinct staining in *Lamb2*-/- vs. *Lamb2*+/+ mice. Uninjected mice showed no specific ferritin signals.

Supplemental Fig. 1

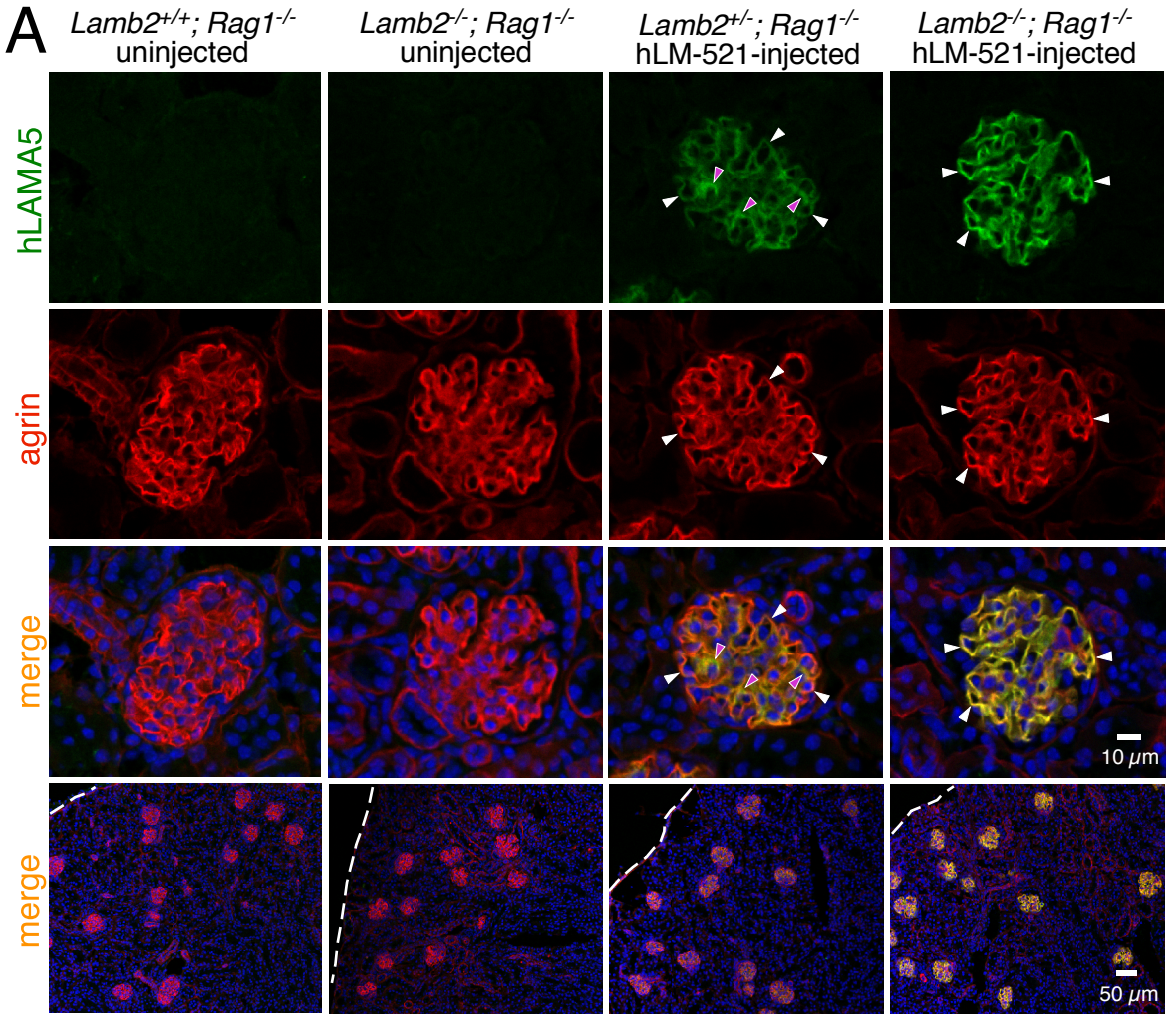


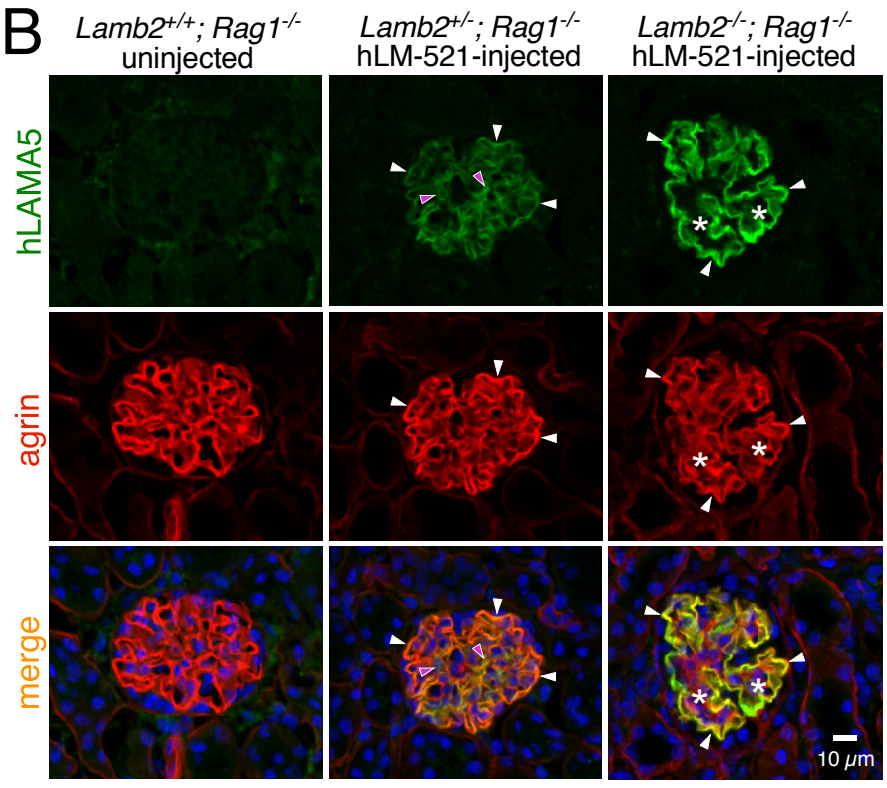


Supplemental Fig. 2

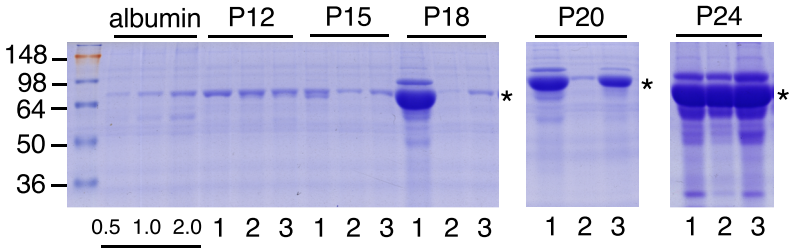


Supplemental Fig. 3





Supplemental Fig. 4



1: *Lamb2-/-*, uninjected

2 & 3: *Lamb2-/-*, hLM-521-injected

Supplemental Fig. 5