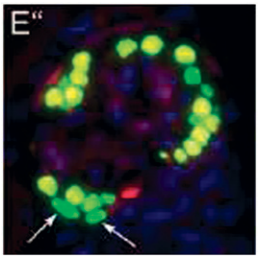
This Month's Highlights

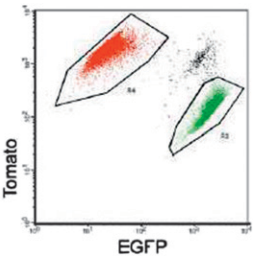
BASIC RESEARCH

A Limited Nephron Reserve of Podocyte Progenitors



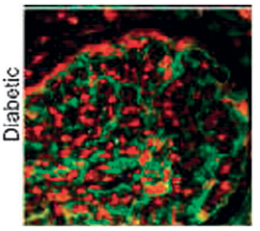
The capacity for podocyte regeneration remains undetermined. Here, Berger *et al.* present evidence that parietal epithelial cell–derived regeneration of podocytes does not occur during physiologic aging or glomerular hypertrophy induced by progressive partial nephrectomy in adult mice. However, committed podocyte progenitors on Bowman's capsule are recruited to the glomerular tuft during renal development. In humans, cells on Bowman's capsule also express a podocyte-specific marker, but only until 7 years of age. The authors postulate that physiologic or pathologic glomerular growth eventually depletes the limited nephron reserve of podocyte progenitors, preventing podocyte regeneration in adults. *See Berger et al., pages* 693–705.

The Possibility of Adult Podocyte Renewal



Also in this issue, Wanner *et al.* report the development of a novel flow cytometry–based method to examine genetically labeled podocytes and provide additional evidence of parietal epithelial cell–derived podocytes in developing kidneys. Similar to Berger *et al.*, these authors did not detect podocyte regeneration after nephrectomy in adult mice or with physiologic aging. However, they did find limited podocyte renewal after toxin-induced acute podocyte ablation in adult mice, although the progenitor population could not be determined. Defining the mechanisms controlling podocyte regeneration during development and acute injury may inform the design of methods to offset podocyte loss in aging and CKD. *See Wanner et al., pages* 707–716.

NOX5 Linked to Nephropathy



Several NADPH oxidase (NOX) enzymes have been implicated in podocyte dysfunction. Mice and rats lack the *Nox5* gene, however, complicating the study of NOX5. Holterman *et al.* found that NOX5 is upregulated in human diabetic nephropathy, and podocyte-specific expression of human NOX5 in mice causes hypertension and renal dysfunction, effects that are exacerbated with streptozotocin-induced diabetes. In cultured human podocytes, NOX5 mediates angiotensin II–induced generation of reactive oxygen species and regulates cytoskeletal organization. Taken together, these observations suggest NOX5 warrants investigation as a novel therapeutic target in the treatment of CKD. *See Holterman et al., pages* 784–797.

CLINICAL EPIDEMIOLOGY

Hemoglobinopathy Traits in CKD

	HbAA	Any Hb Trait
Percent change in ESA dose[a] (95% CI)	Reference	13.2 (5.1 to 21.9) P=0.001
Percent change in weight-adjusted ESA dose[b] (95% CI)	Reference	14.9 (6.3 to 24.2) P<0.001

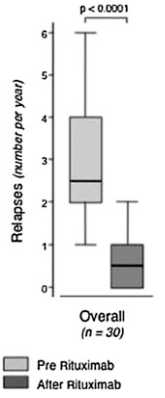
The effects of hemoglobinopathy traits in hemodialysis patients are not understood. In this issue, Derebail *et al.* present data from their cross-sectional study investigating sickle cell and hemoglobin C traits and erythropoiesis-stimulating agent (ESA) dosing in a large population of African-American prevalent hemodialysis patients. These patients had a higher prevalence of sickle cell trait compared with the general African-American population, and both traits associated with higher doses of ESA. These data support the need to further examine the relationship between hemoglobinopathy traits and CKD. *See Derebail et al., pages* 819–826

Geographic Location and Pediatric Kidney Transplant Access

Do geographic disparities affect pediatric access to kidney transplantation in the United States? Reese *et al.* performed a retrospective cohort study to determine the relationships between patient and donor service area factors and pediatric waiting time for deceased donor kidney transplant, and found waiting time varied considerably across donor service areas. After adjustment, pediatric access to transplant decreased in areas with the lowest ratio of pediatric-quality kidneys to candidates, but did not associate significantly with the percentage of kidneys diverted locally to adult recipients. These data should prompt further discussion regarding methods to achieve equitable access to pediatric kidney transplantation. *See Reese et al., pages* 827–835.

CLINICAL RESEARCH

Rituximab for Idiopathic Nephrotic Syndrome



Patients with idiopathic nephrotic syndrome (NS) often relapse after steroid tapering or withdrawal. Ruggenenti *et al.* undertook a longitudinal study of rituximab followed by immunosuppression withdrawal on disease recurrence in 10 children and 20 adults with steroid-dependent or frequently relapsing NS. During 1 year of follow-up, numbers of total and per-patient relapses decreased, as did maintenance steroid doses. Notably, 30 patients remained in remission after 1 year, 14 of whom completed withdrawal without relapse, and children resumed normal growth rates. Although a nonrandomized trial, these results suggest rituximab may benefit patients with idiopathic NS. *See Ruggenenti et al., pages* 850–863.