

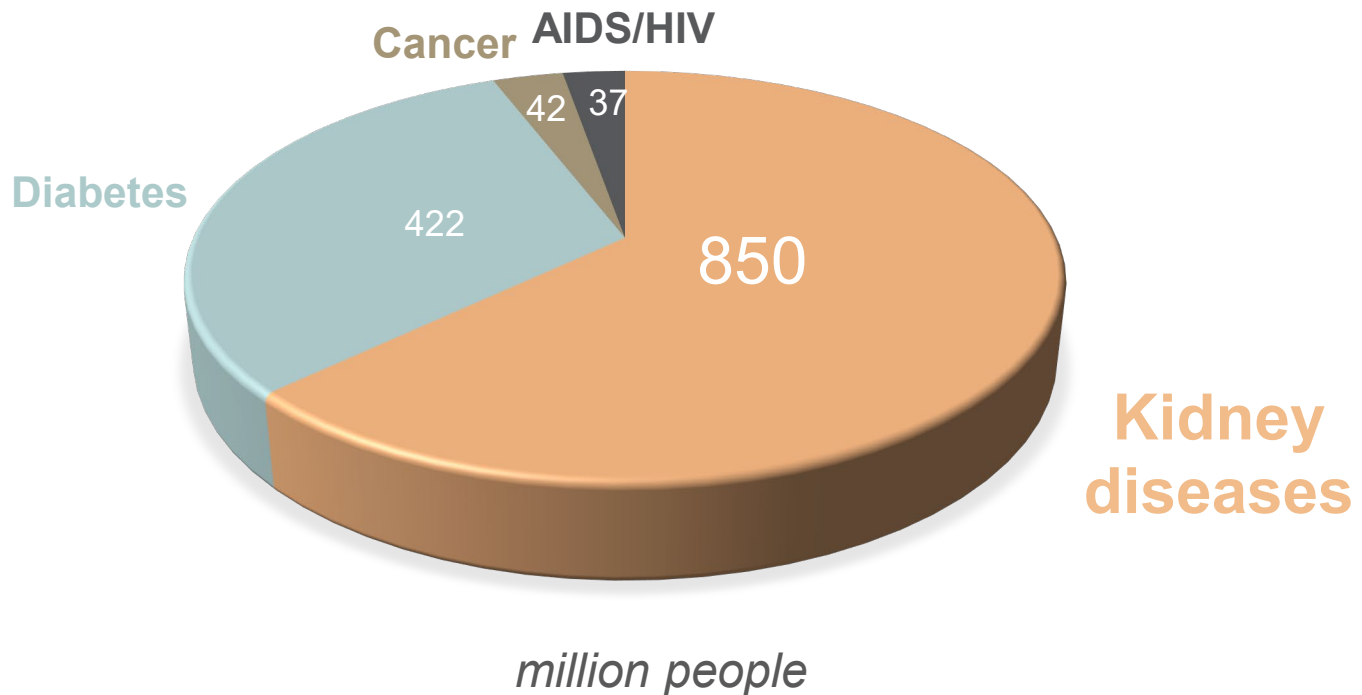
Donne, tecnologia e ricerca

Ariela Benigni

Milano, 29 gennaio 2020



KIDNEY DISEASES ARE SOME OF THE MOST COMMON DISEASES WORLDWIDE



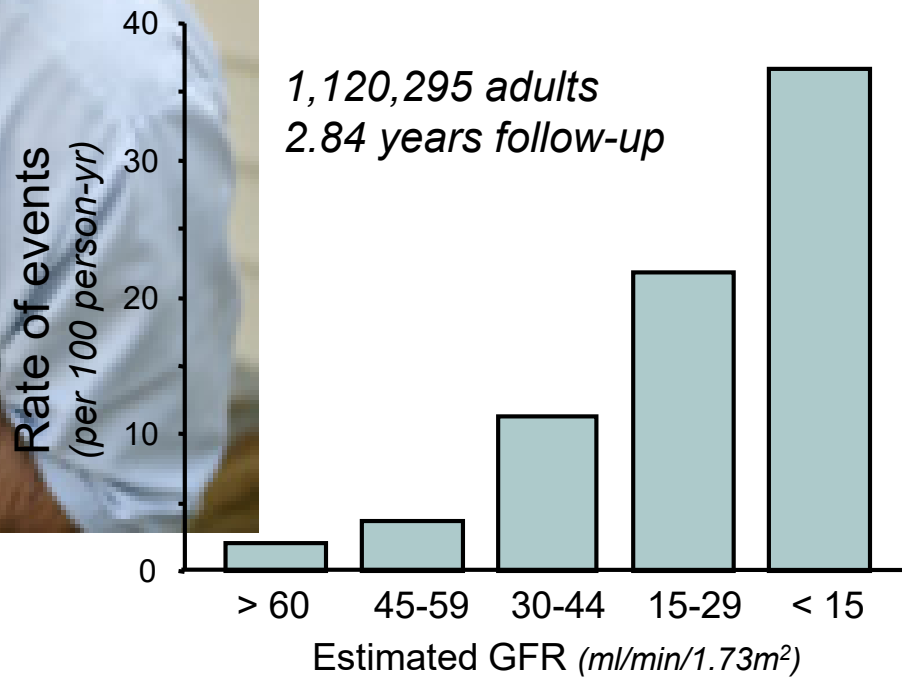
ERA-EDTA Press release, June 27, 2018

Between 5 and 7 million people died prematurely in 2010 because they did not have access to renal replacement therapy

This figure is double the number of deaths due to tuberculosis, malaria and AIDS combined



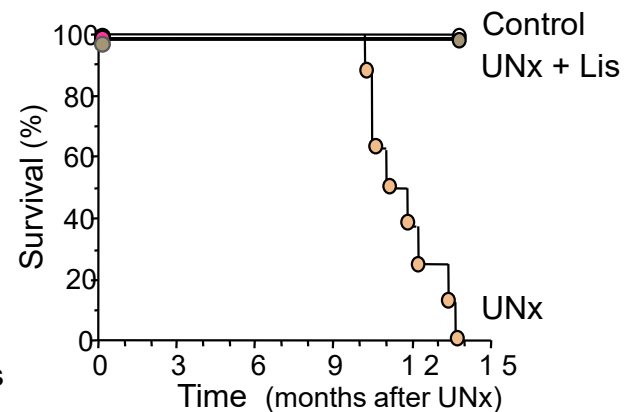
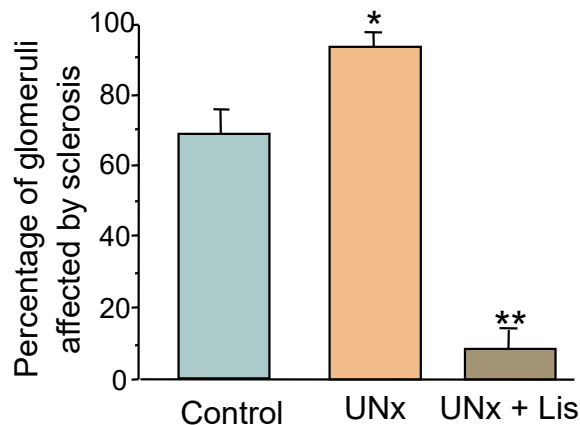
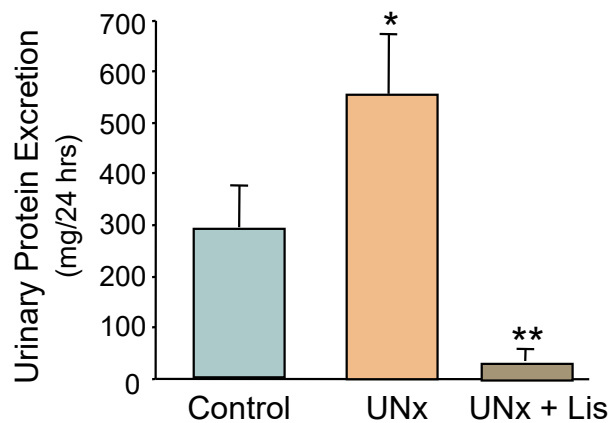
Liyanage et al., *Lancet*, 2015



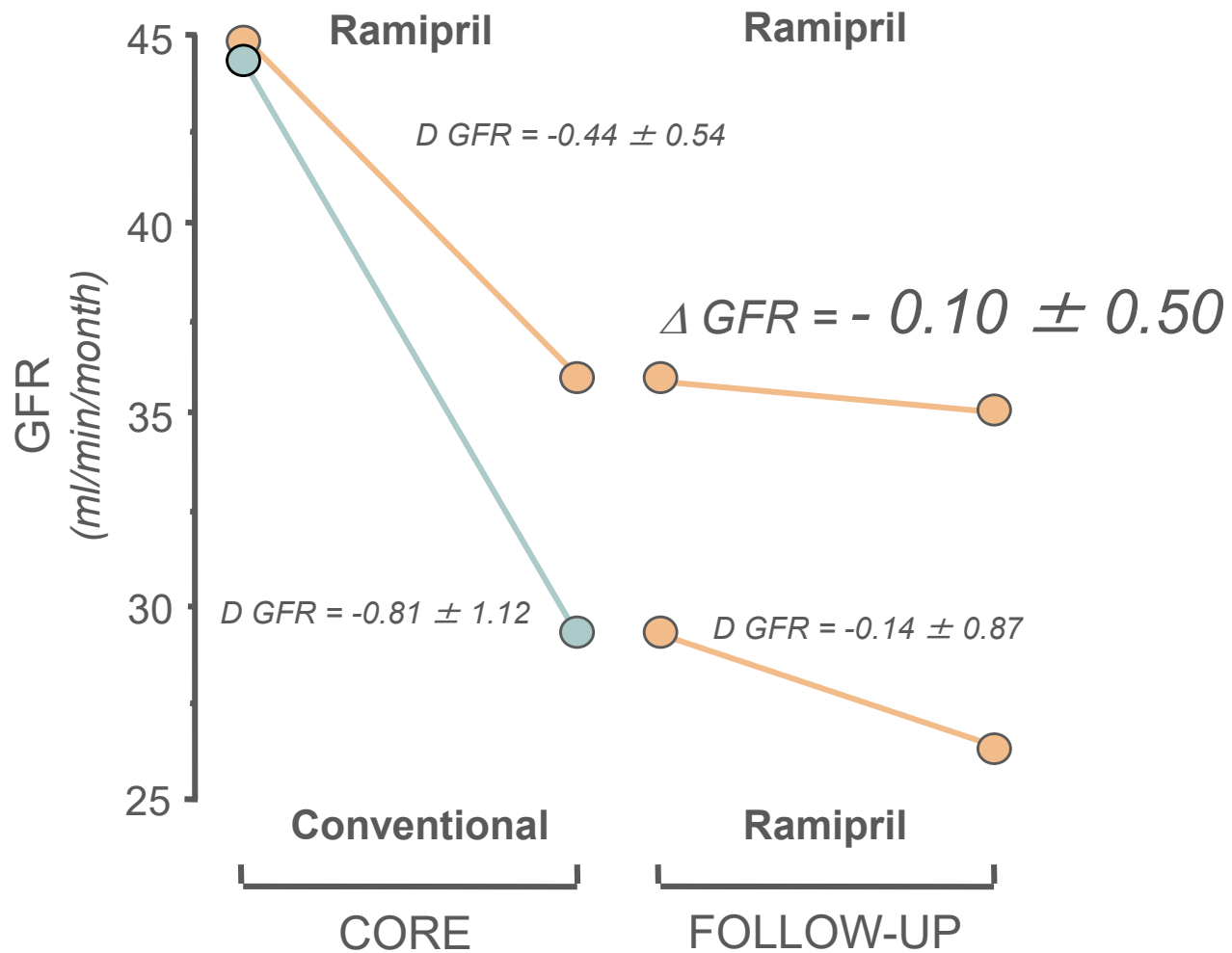
Go et al., *N Engl J Med*, 2004



ACE INHIBITION PREVENTS RENAL FAILURE AND DEATH IN UNINEPHRECTOMIZED MWF/ZTM RATS

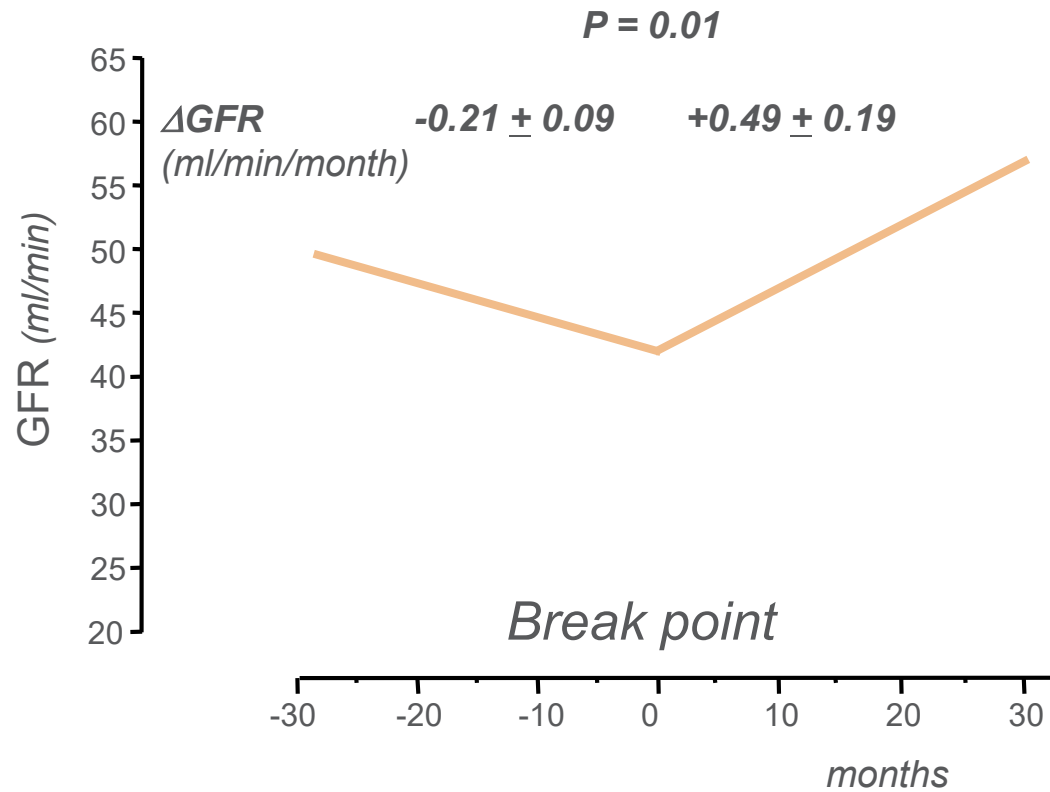


* p < 0.05, **p < 0.01 vs control



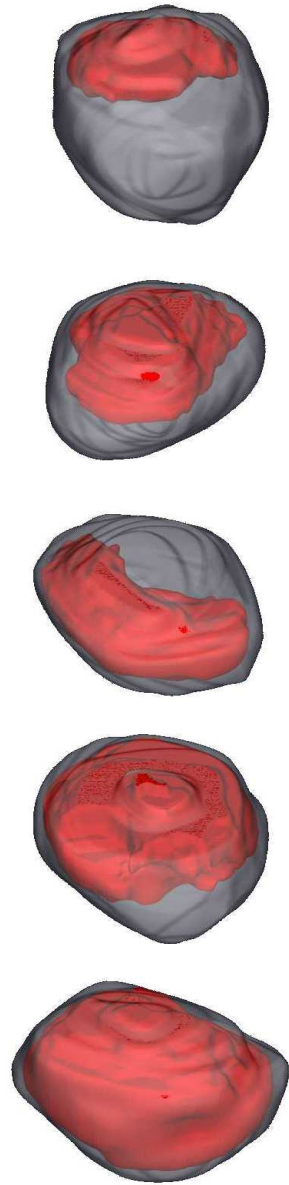
REGRESSION

10 patients with increasing GFR

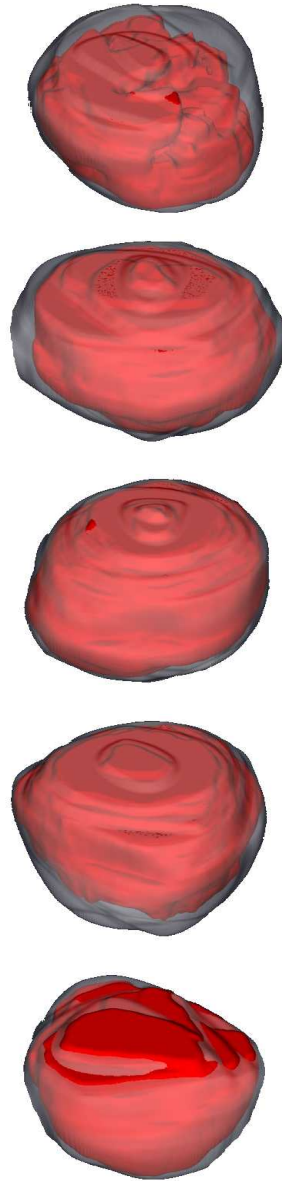




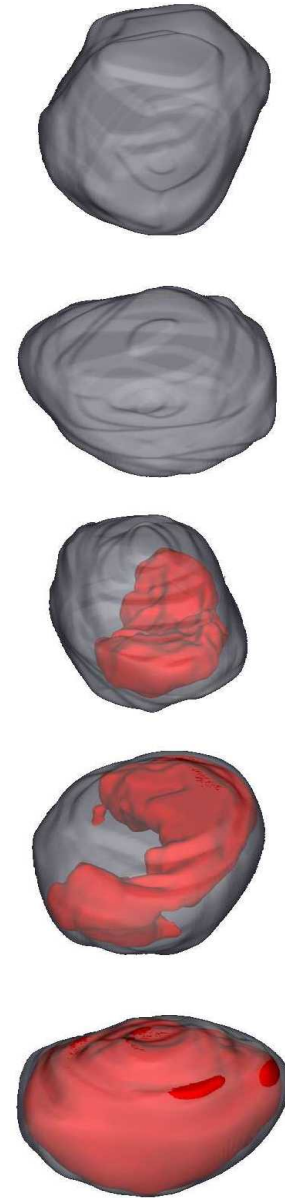
MWF 50W



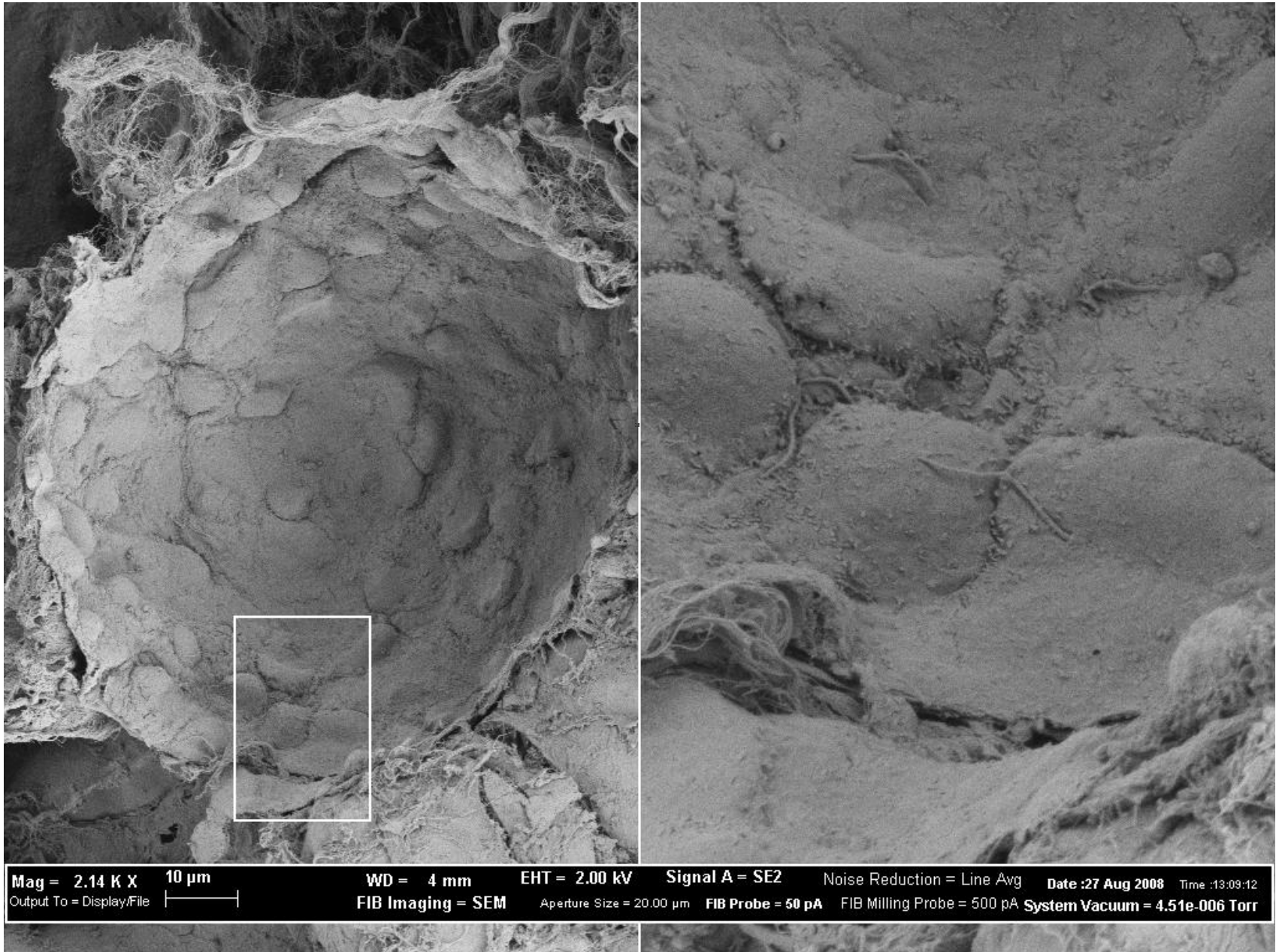
MWF 60W



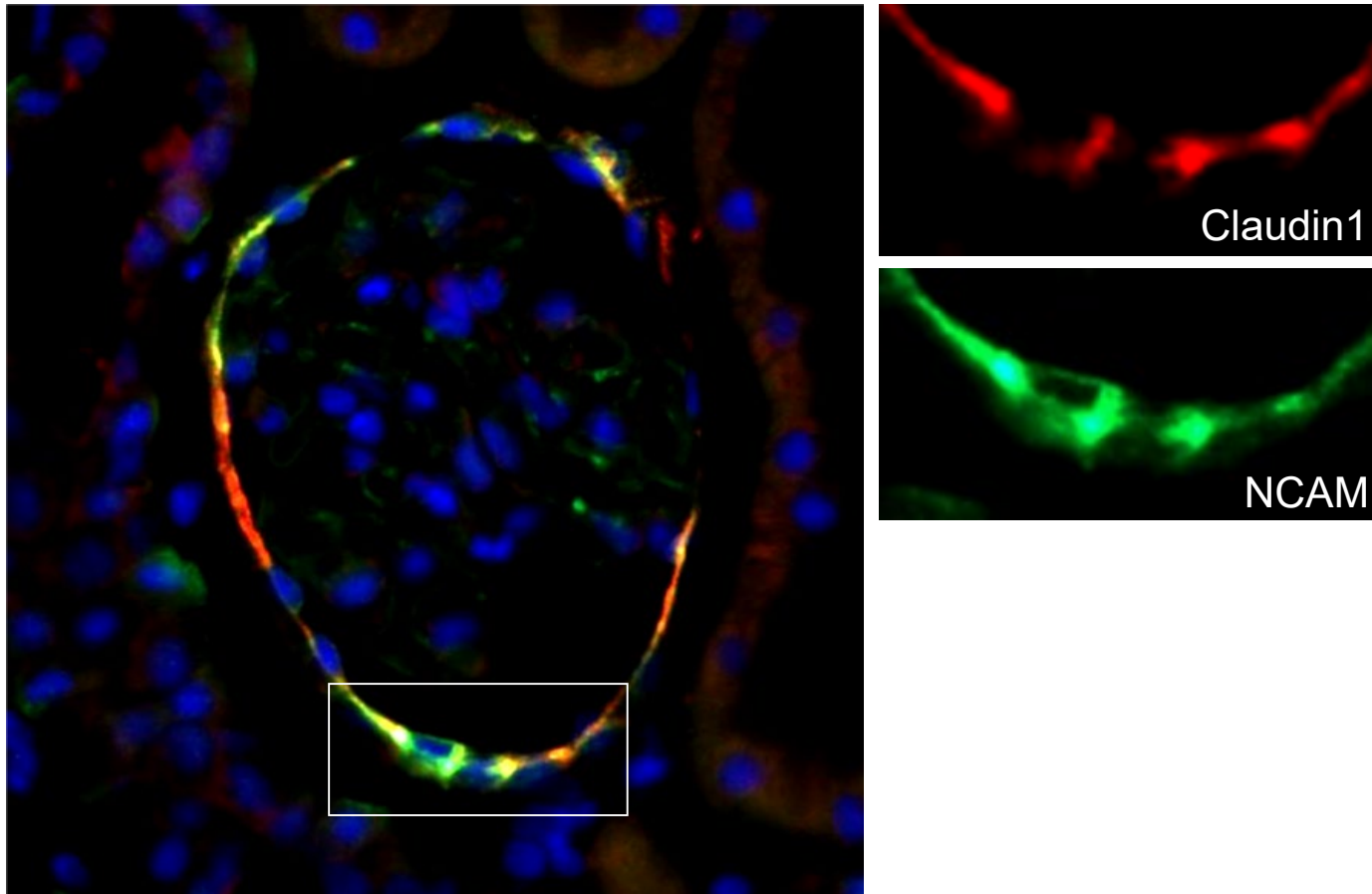
MWF+LIS 50-60 w



Bowman's capsule at SEM

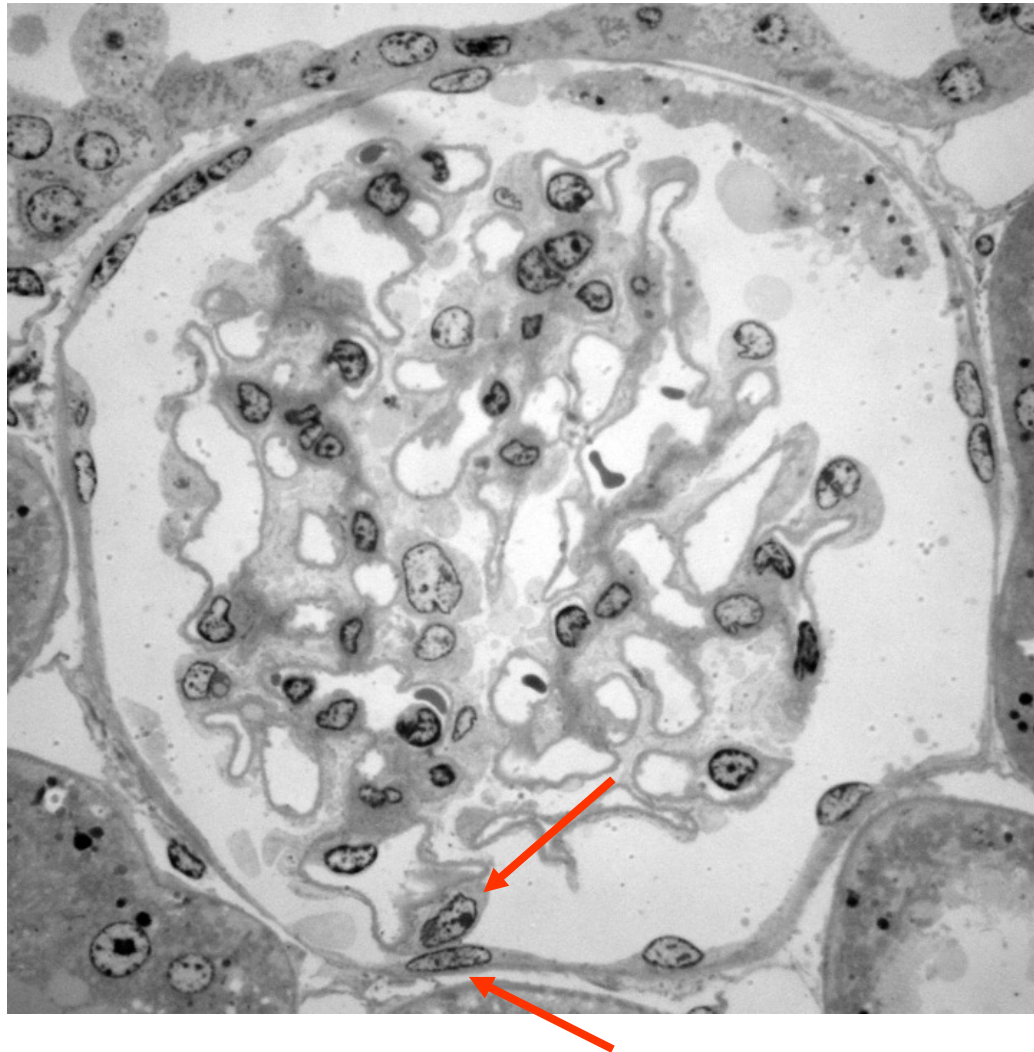


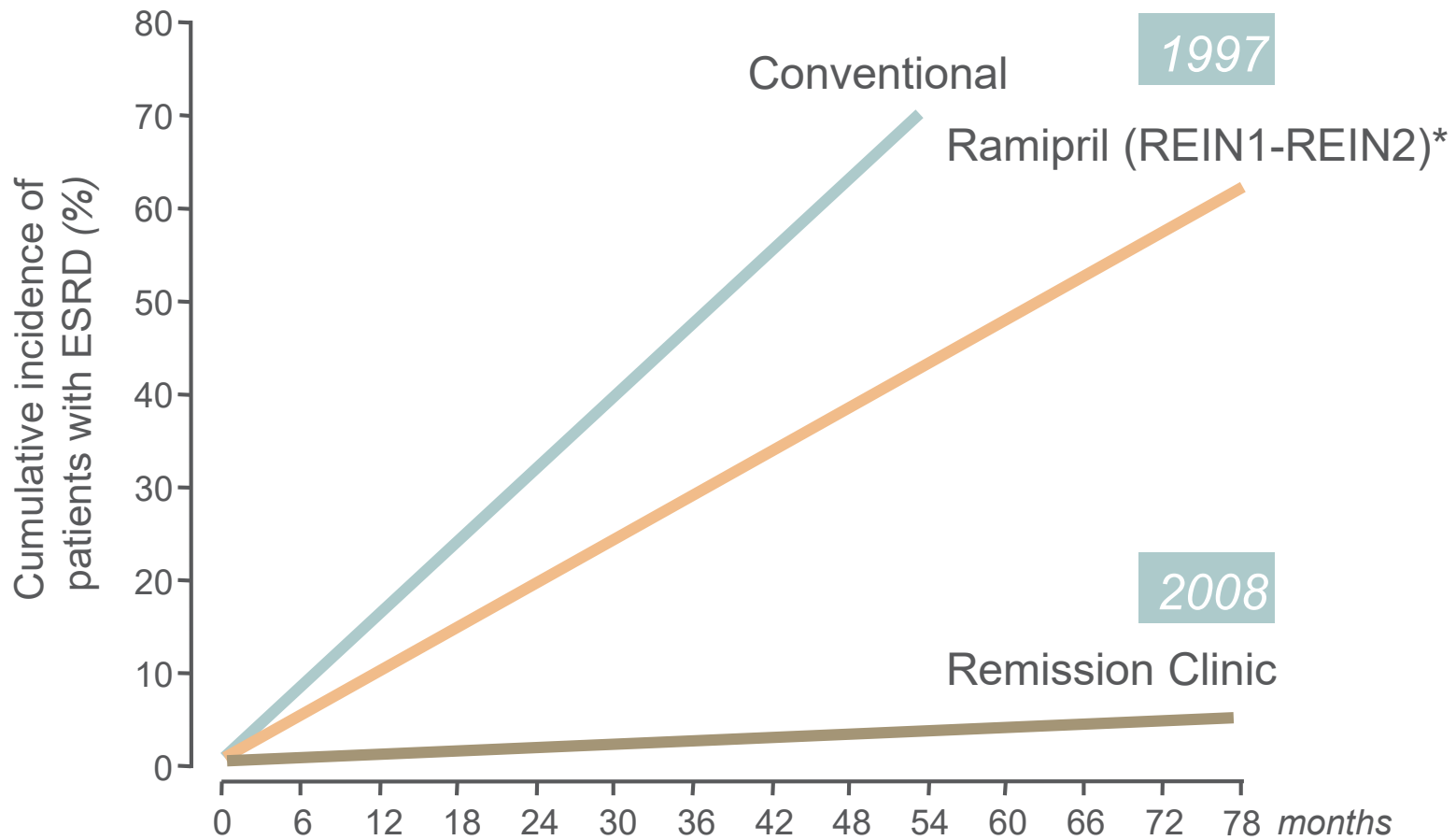
NEURAL CELL ADHESION MOLECULE (NCAM)* REPRESENTS A MARKER FOR RENAL PROGENITOR CELLS IN THE BOWMAN'S CAPSULE OF NORMAL RATS



*A protein expressed in metanephric mesenchyme

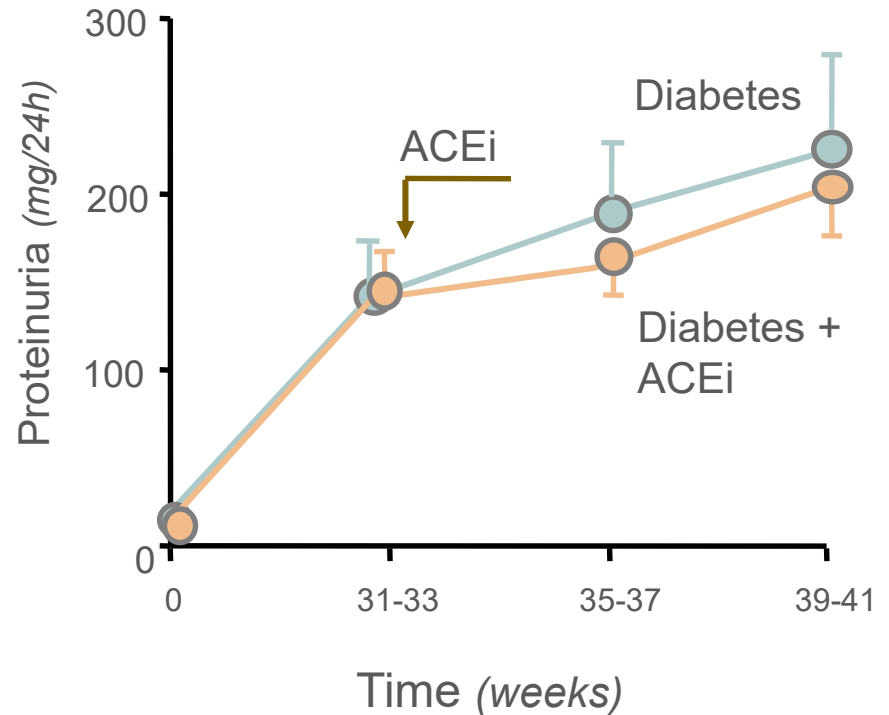
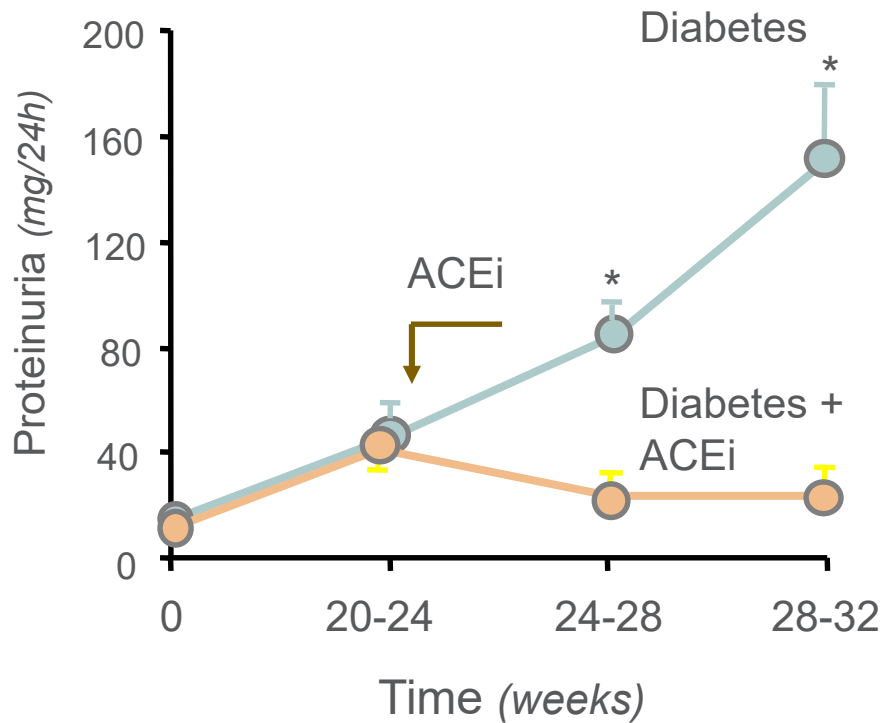
MIGRATION OF PARIETAL CELLS FROM THE BOWMAN'S CAPSULE TO CAPILLARY TUFT



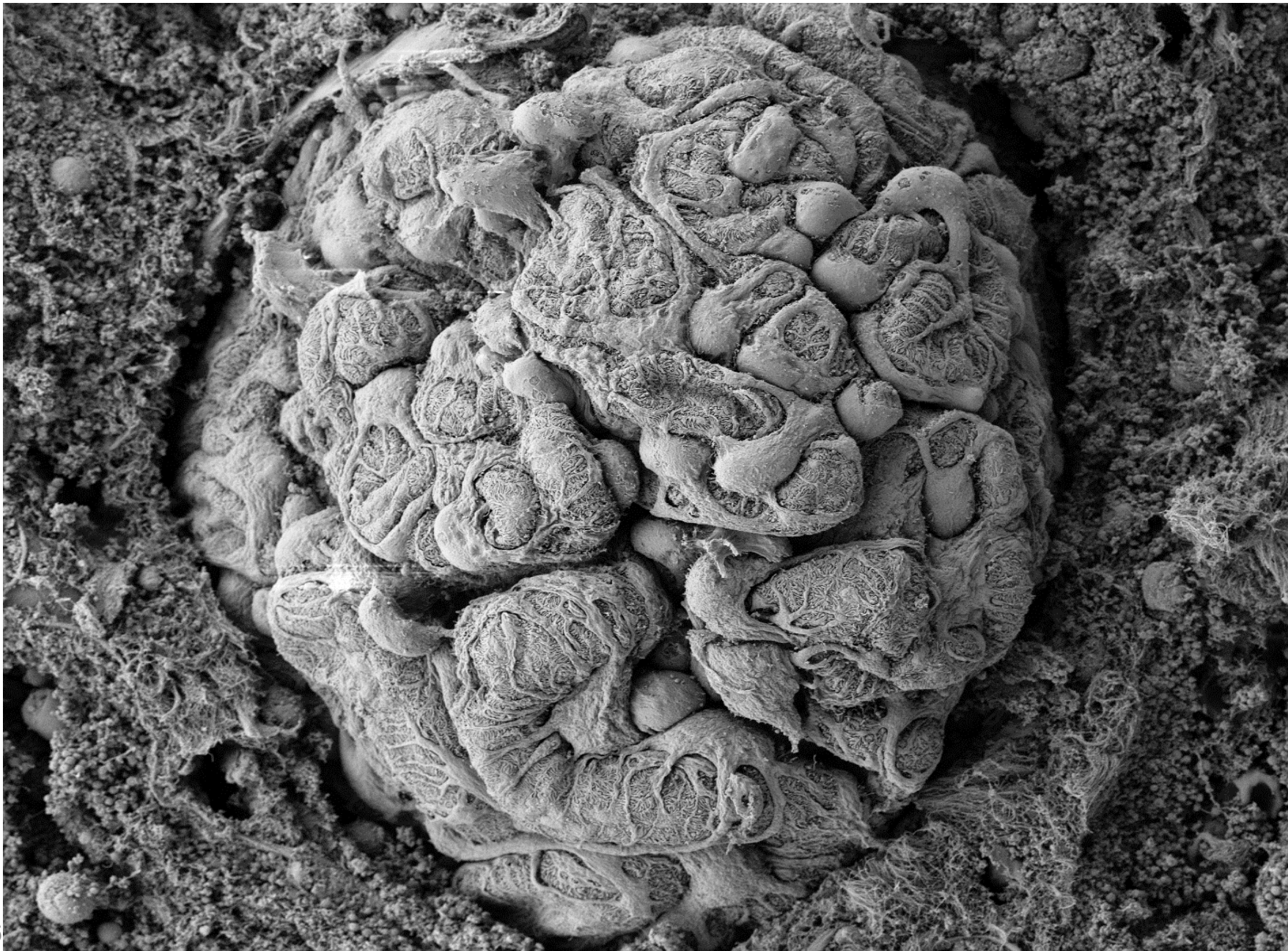


* Patients from REIN with CKD and proteinuria ≥ 3 g /24 h

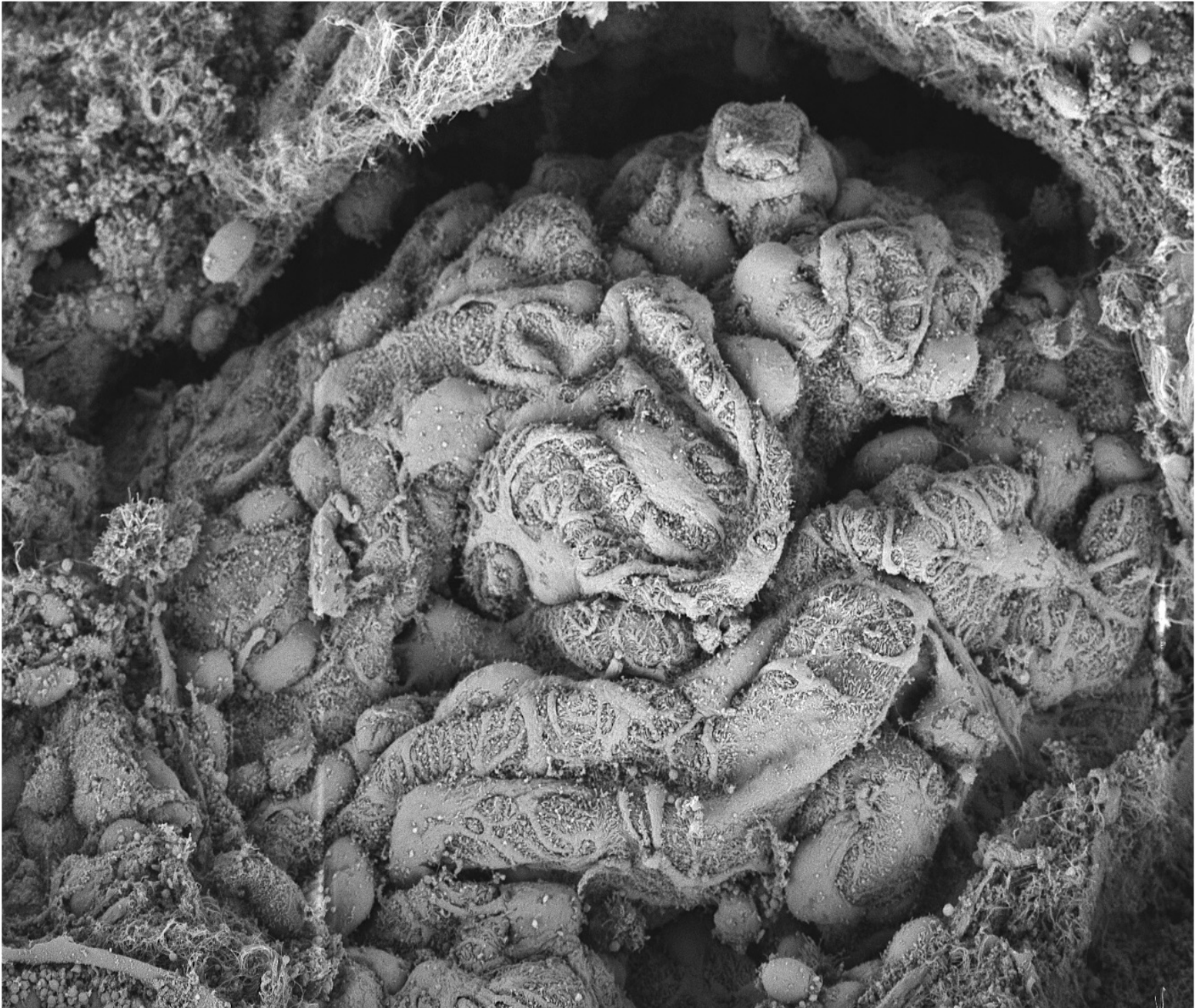
EVIDENCE THAT ACE-I HAS A DIFFERENT EFFECT ON GLOMERULAR INJURY ACCORDING TO THE DIFFERENT PHASE OF THE DISEASE AT WHICH THE TREATMENT IS STARTED



Controls



Microalbuminuric



Macroalbuminuric



HEART TRANSPLANT RECIPIENT CLIMBS THE MATTERHORN (Swiss Alps)

42-year-old Kelly Perkins becomes the first person with a heart transplant to ascend the 4478-m peak



Kelly Perkins on her climb



The Matterhorn in Zermatt, Switzerland

New York Times
November 27, 2012

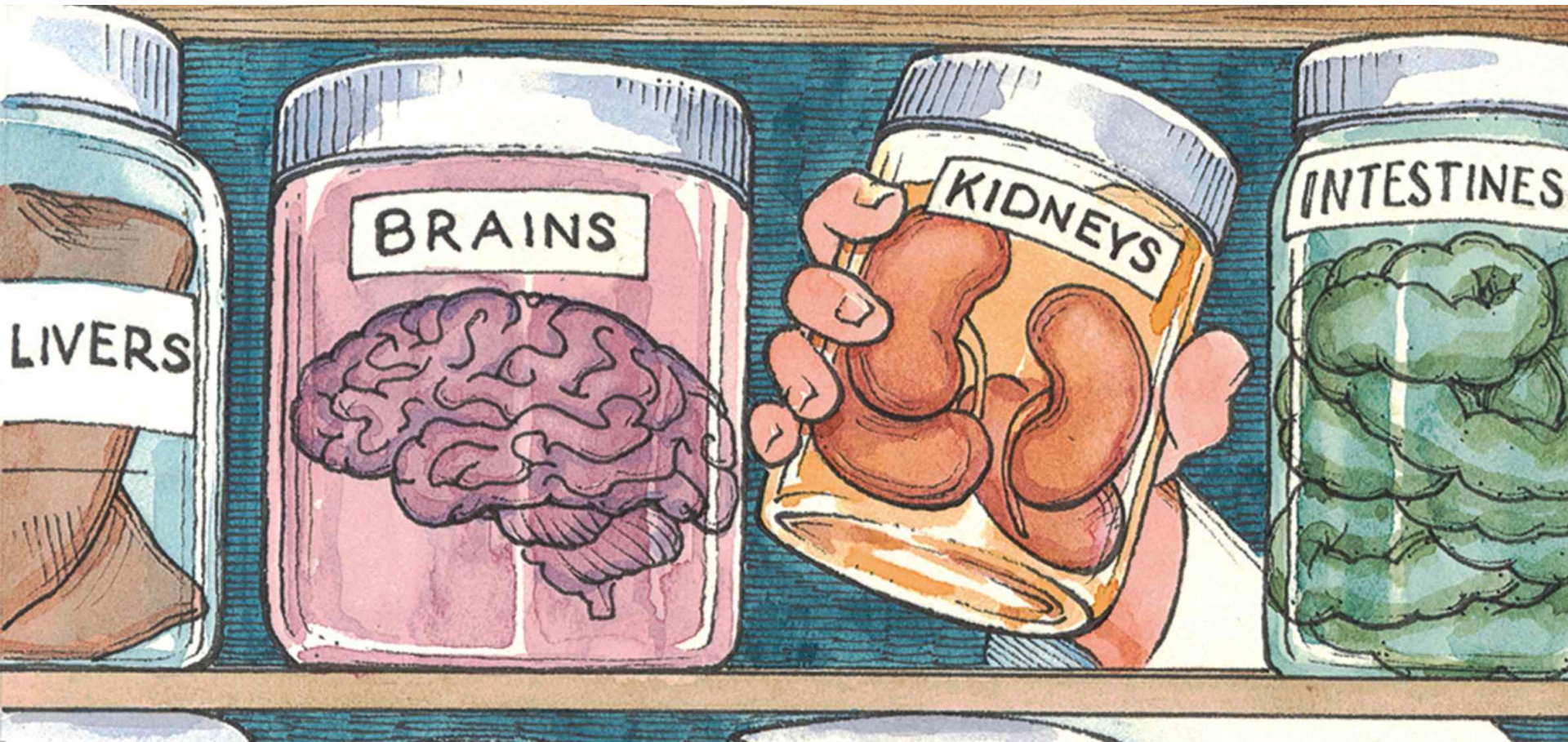
Joseph E. Murray, Transplant Doctor and Nobel Prize Winner, Dies at 93

By CORNELIA DEAN



We're victims of our success

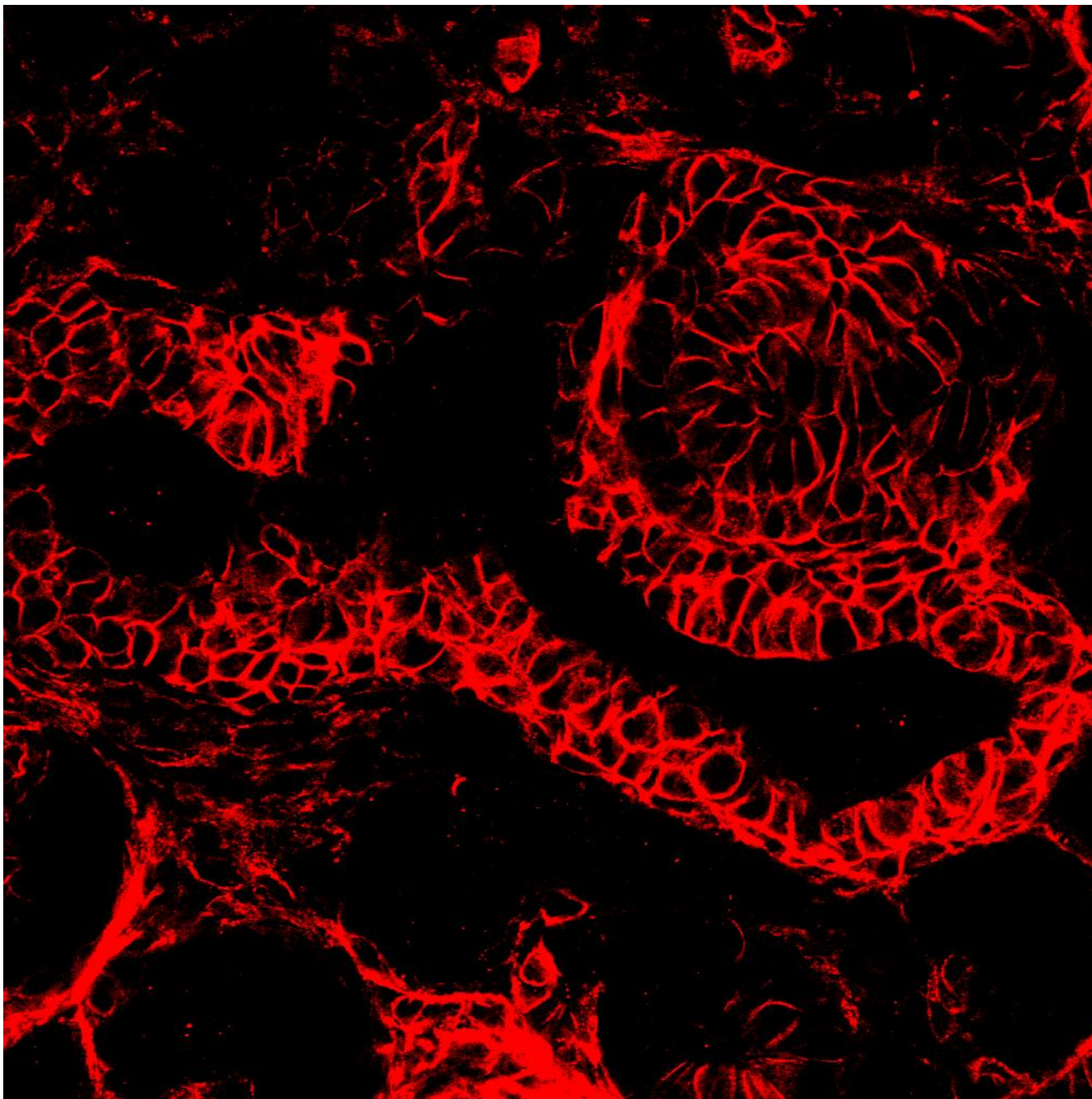
Lack of donor organs is literally an insoluble problem until you can create organs in some other way



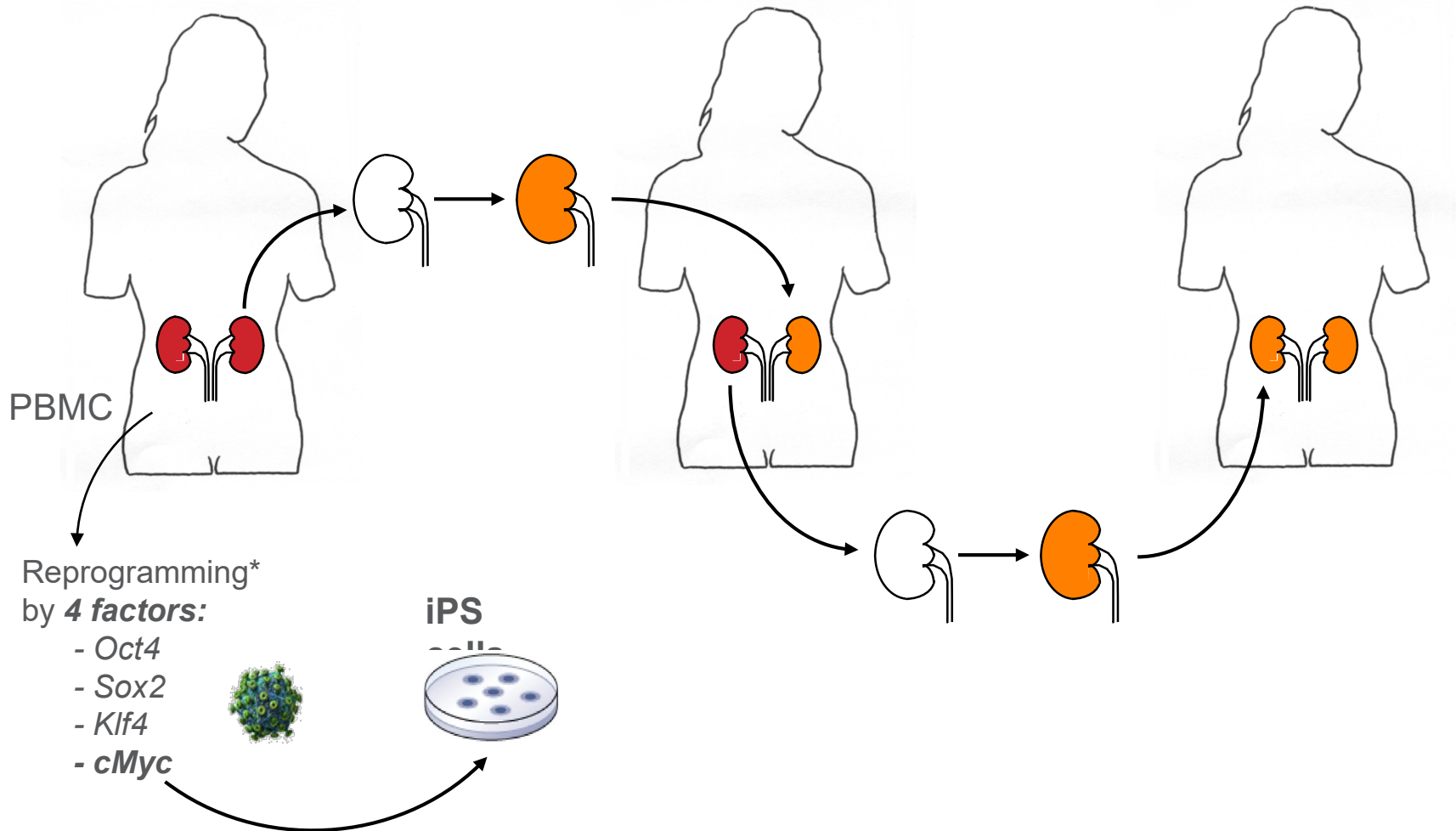
Geoffrey Carr, *The Economist*, 2017

- *Will organs created in the lab be a solution?*

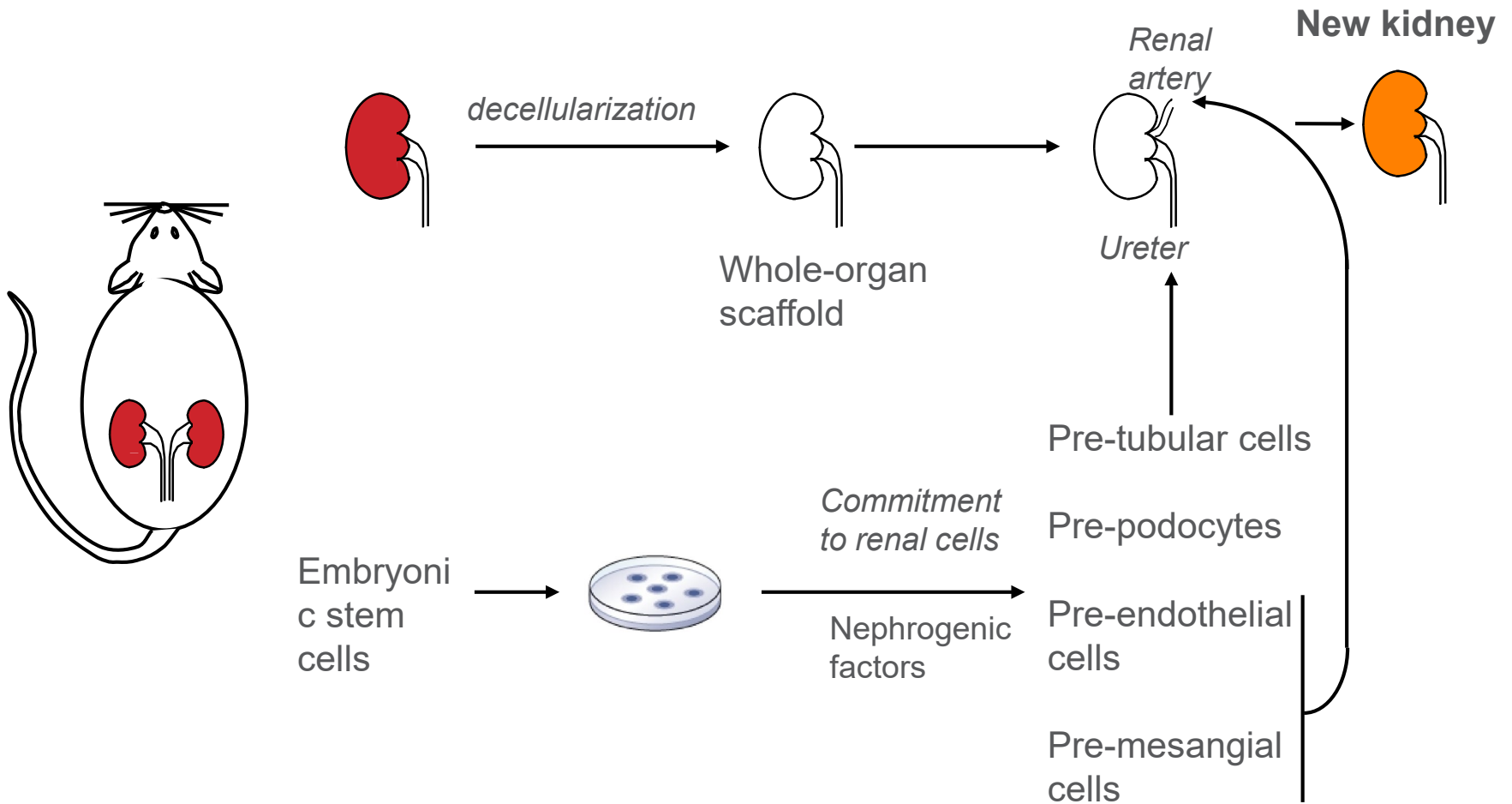
In vitro
15 days



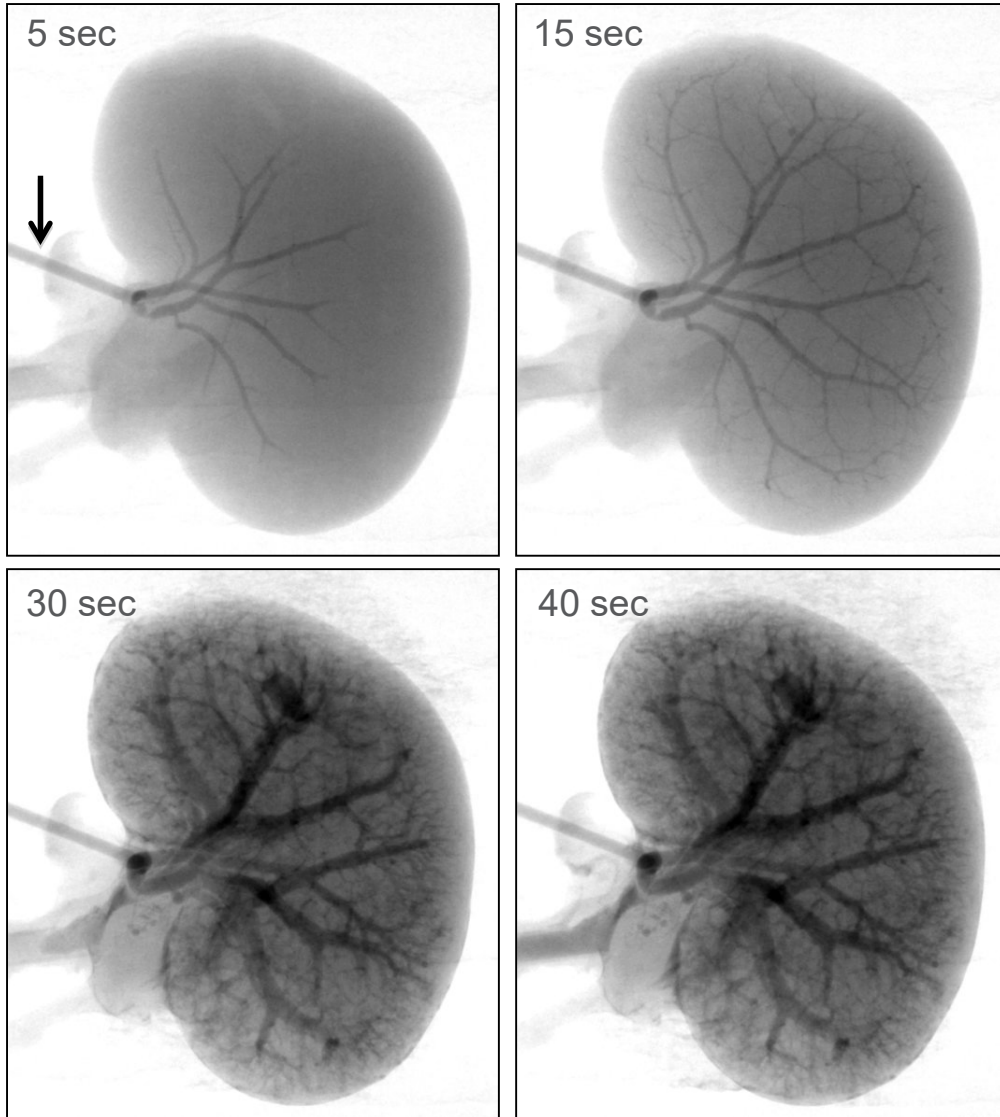
IDEAS ADVANCED GRANT - *European Research Council*



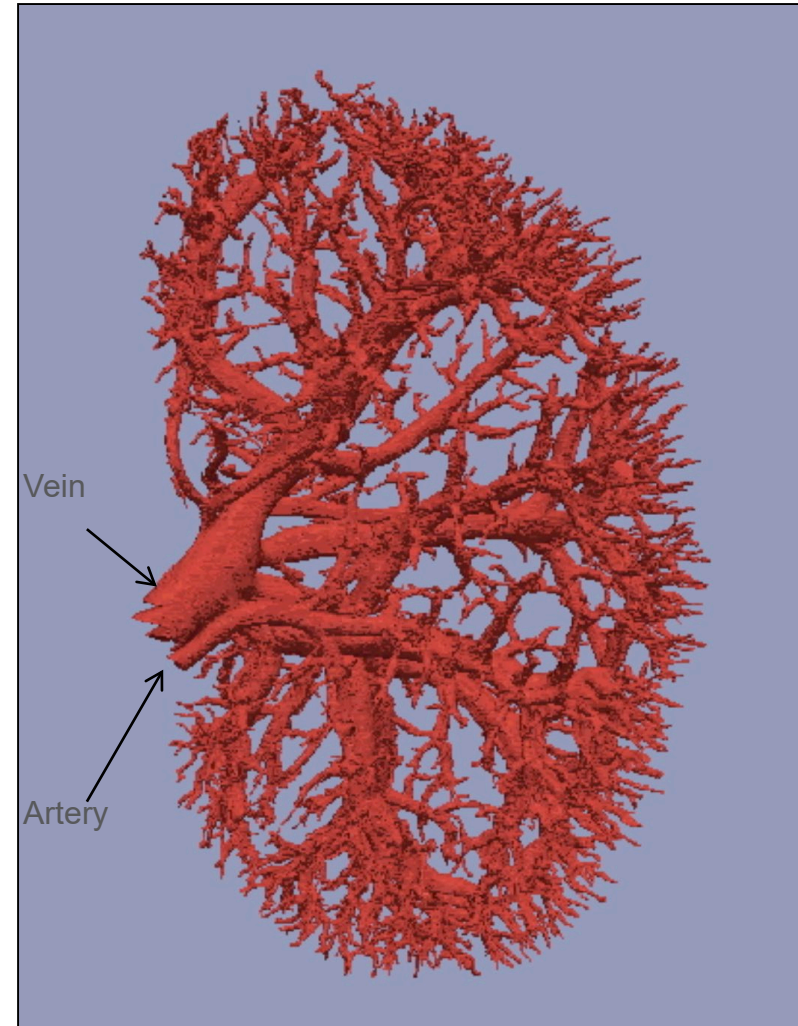
IDEAS ADVANCED GRANT - *European Research Council*



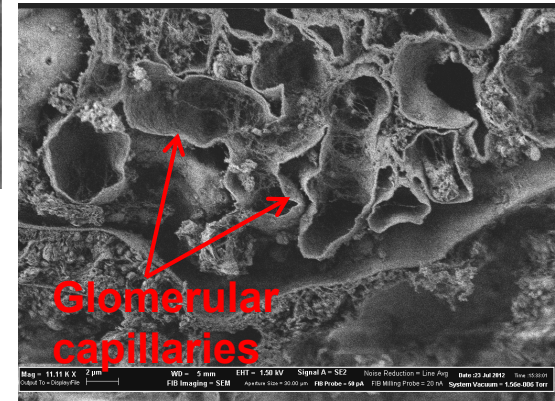
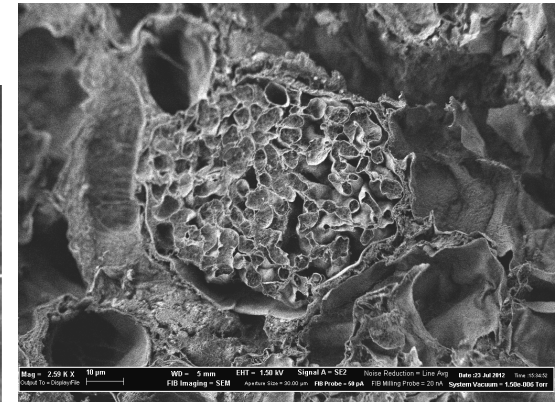
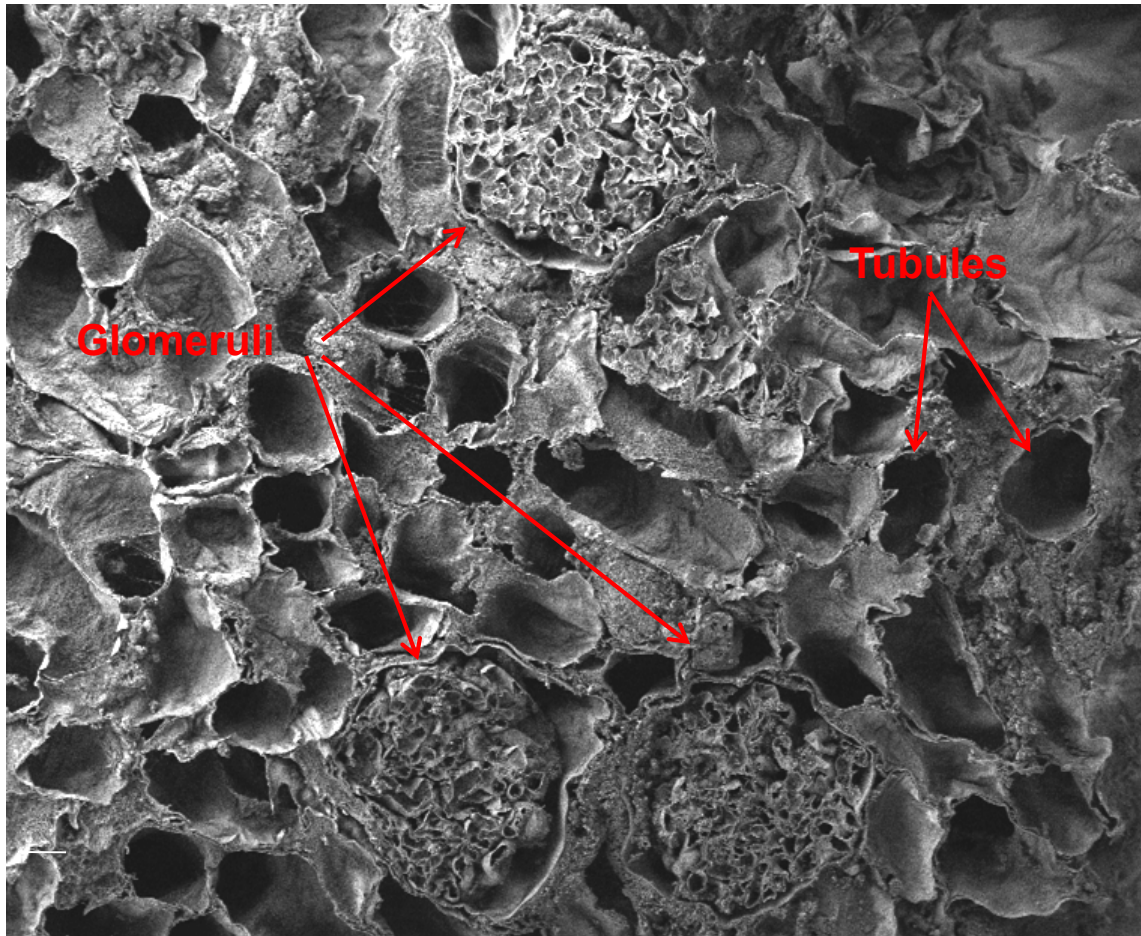
Micro-CT sequence of a representative rat kidney acellular scaffold during Microfil infusion



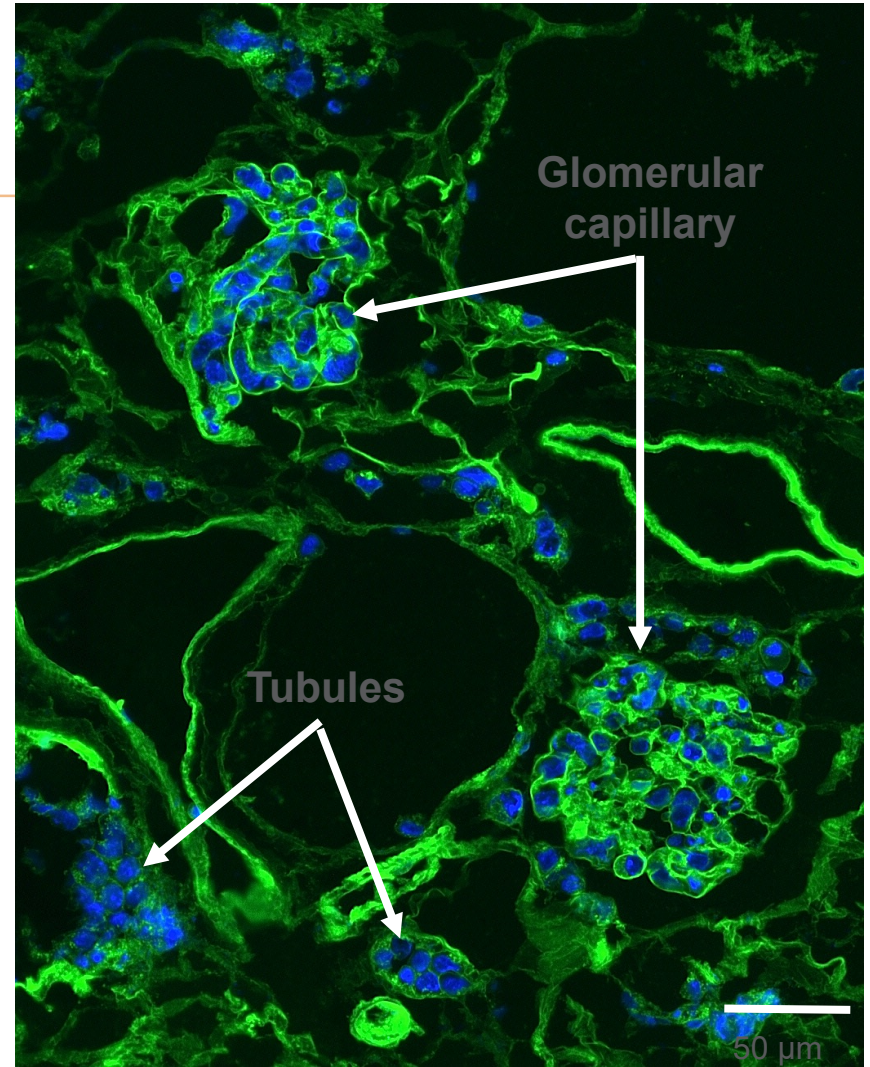
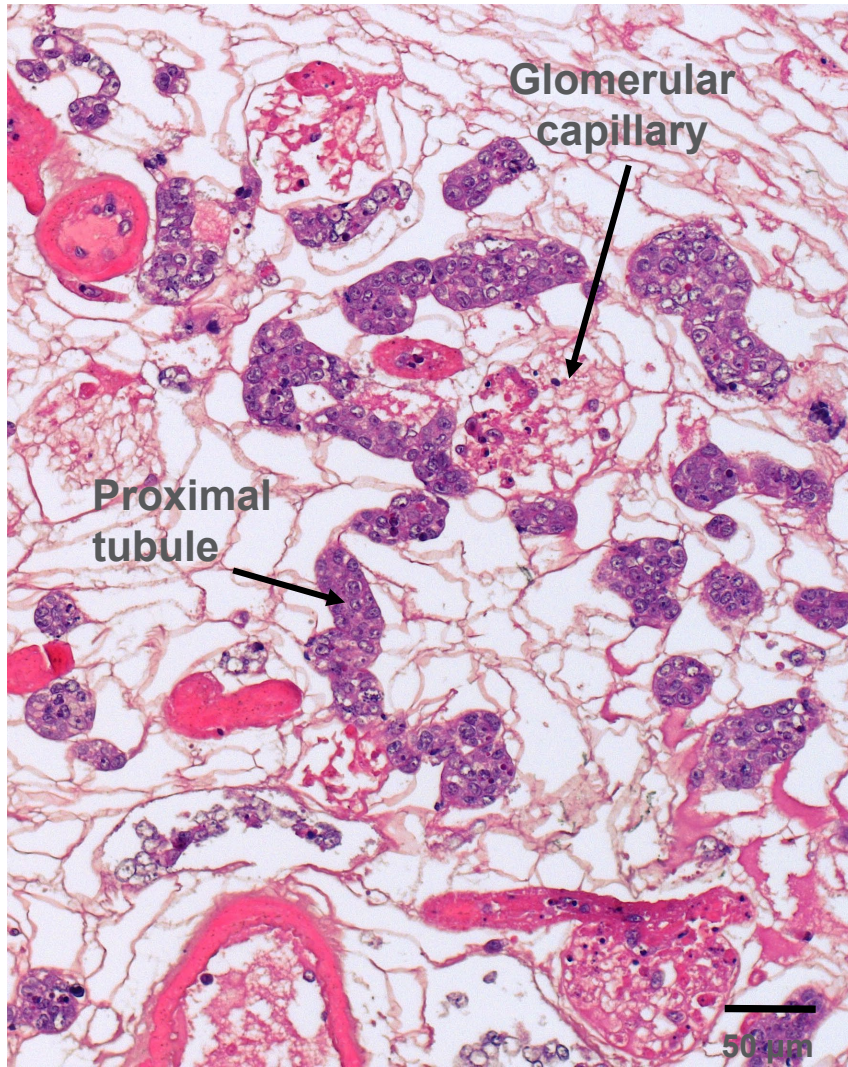
3D digital reconstruction of the scaffold after Microfil infusion



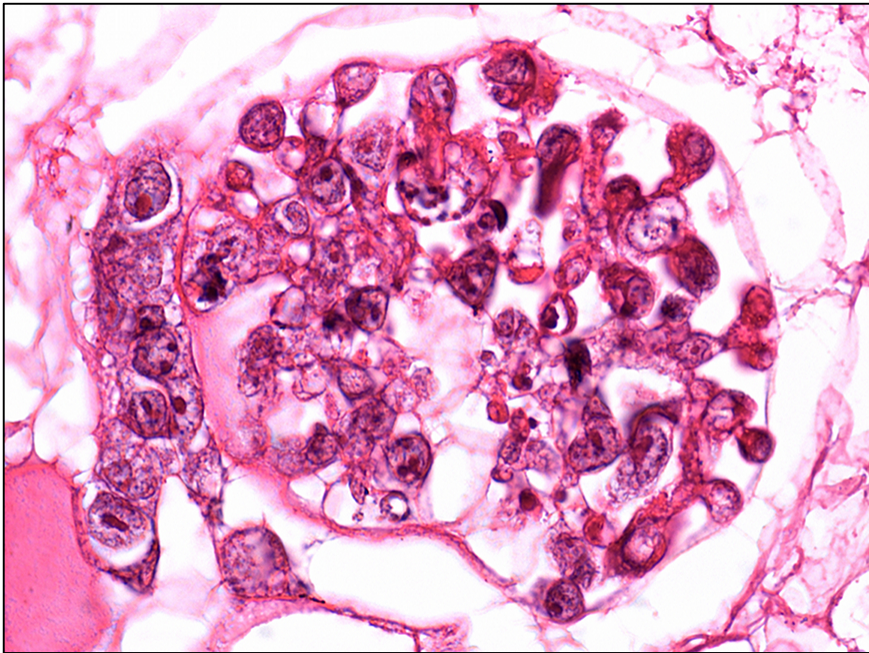
SEM analysis of decellularized kidneys



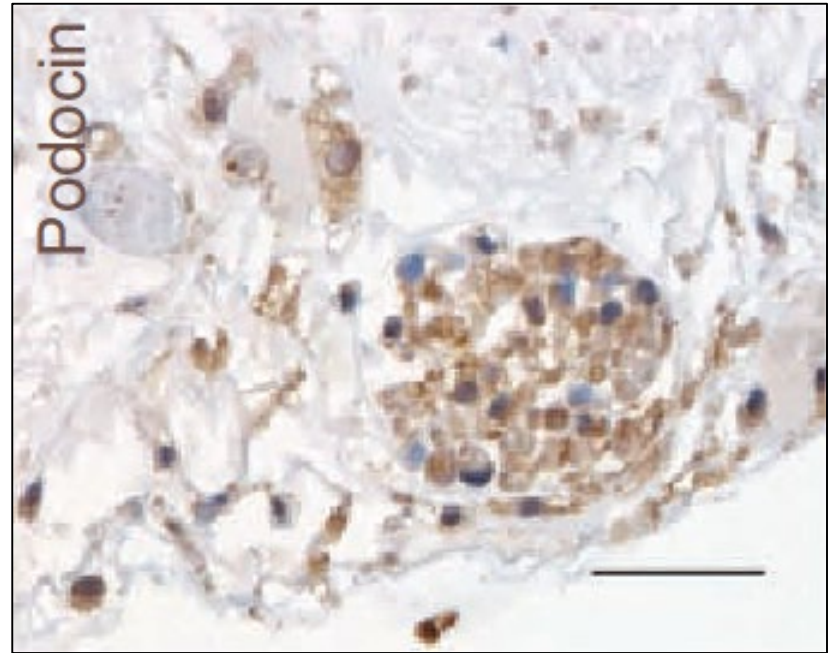
Scanning electron microscopy (SEM) of acellular glomeruli and adjacent tubules (scale bar, 20µm)



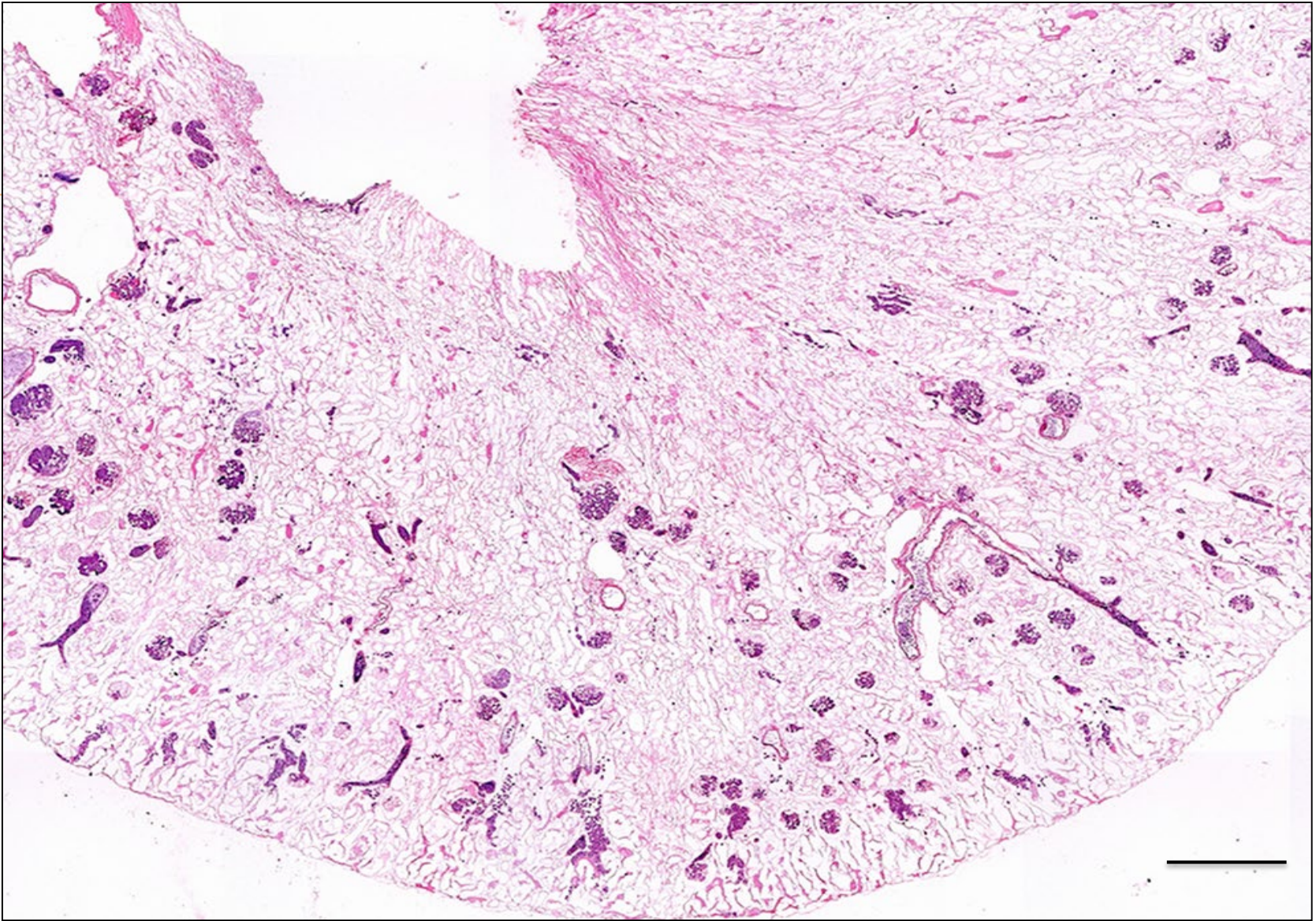
Kidney scaffold infused with mES cells through the renal artery and the collecting system and cultured for 72 hrs



Remuzzi A. *Scientific Report*, 2017



Song et al., *Nature Med*, 2013

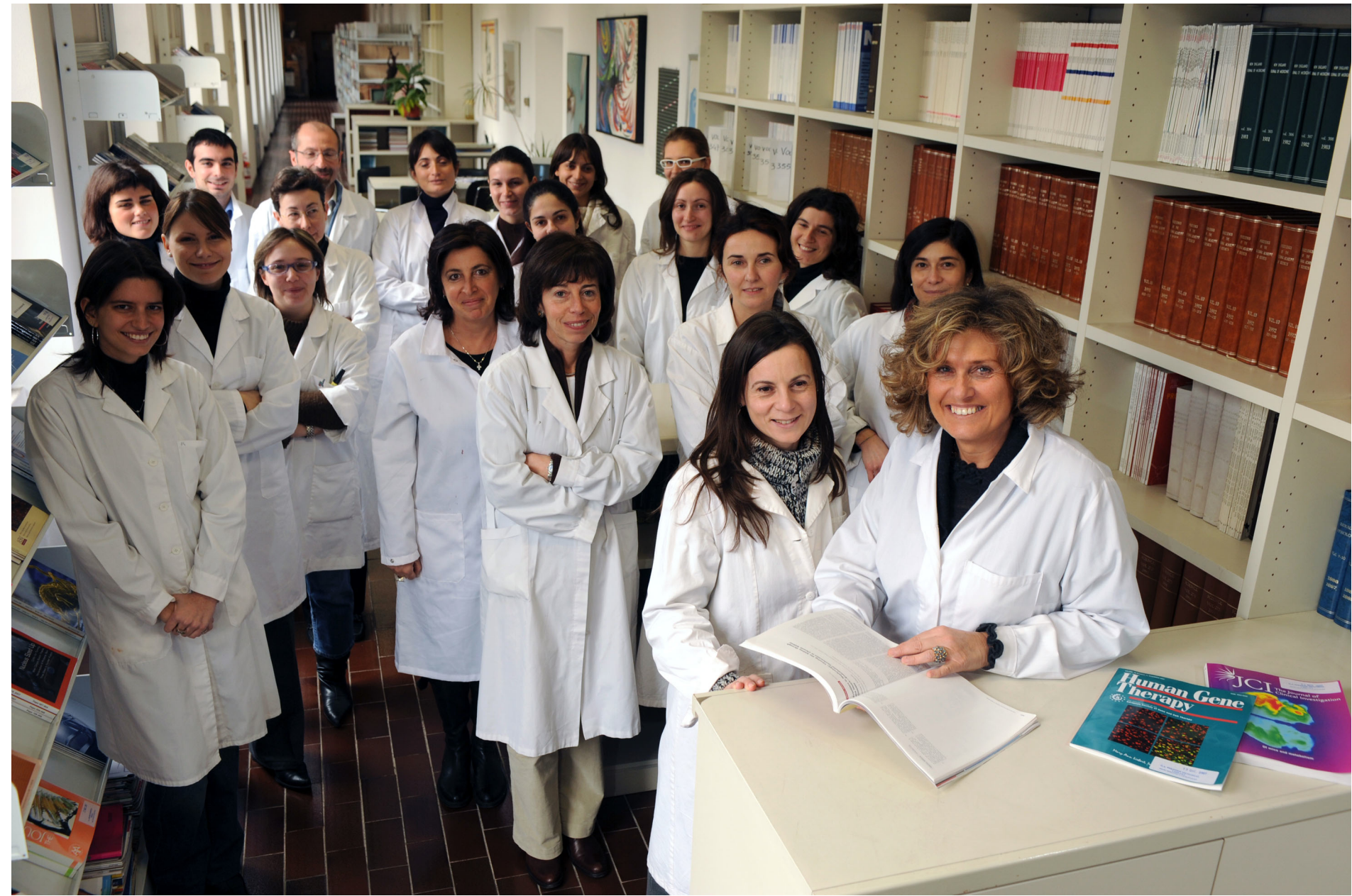


“Achievements and Hurdles of Kidney Regeneration by Tissue Engineering”

2015

“Experimental Evaluation of Kidney Regeneration by Organ Scaffold Recellularization”

Scientific Report, 2017



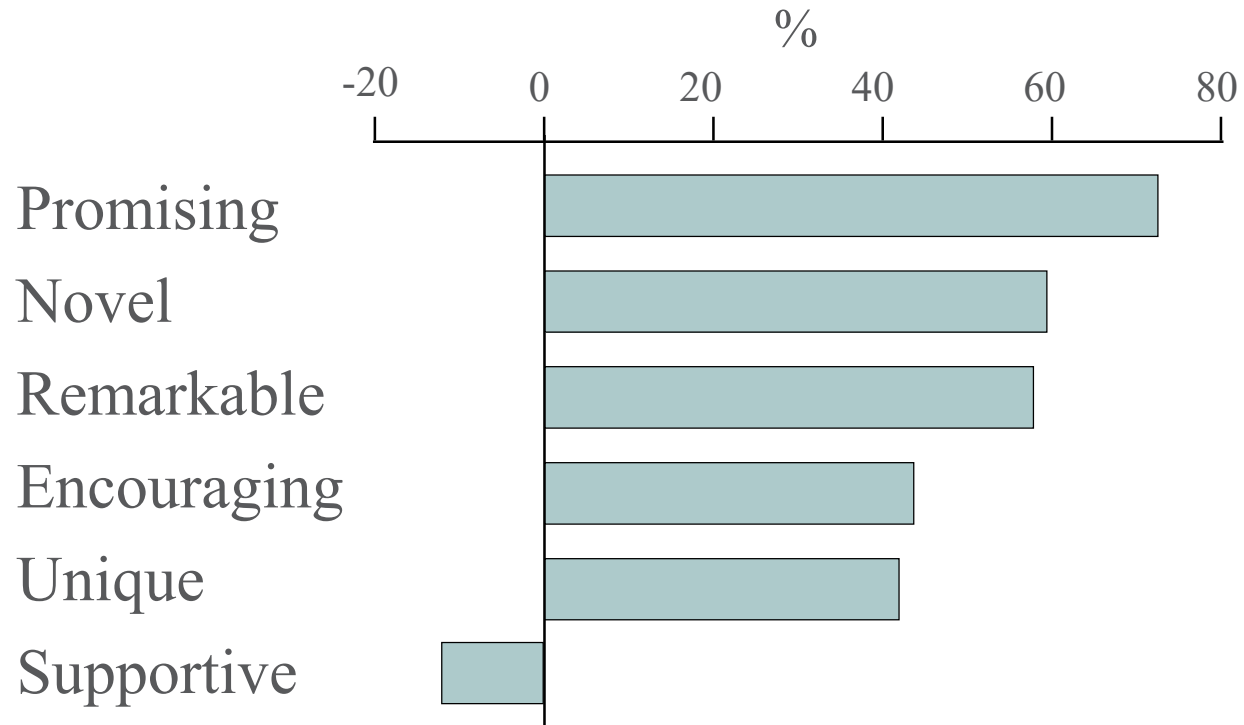
The Economist January 11th 2020

A novel and promising finding

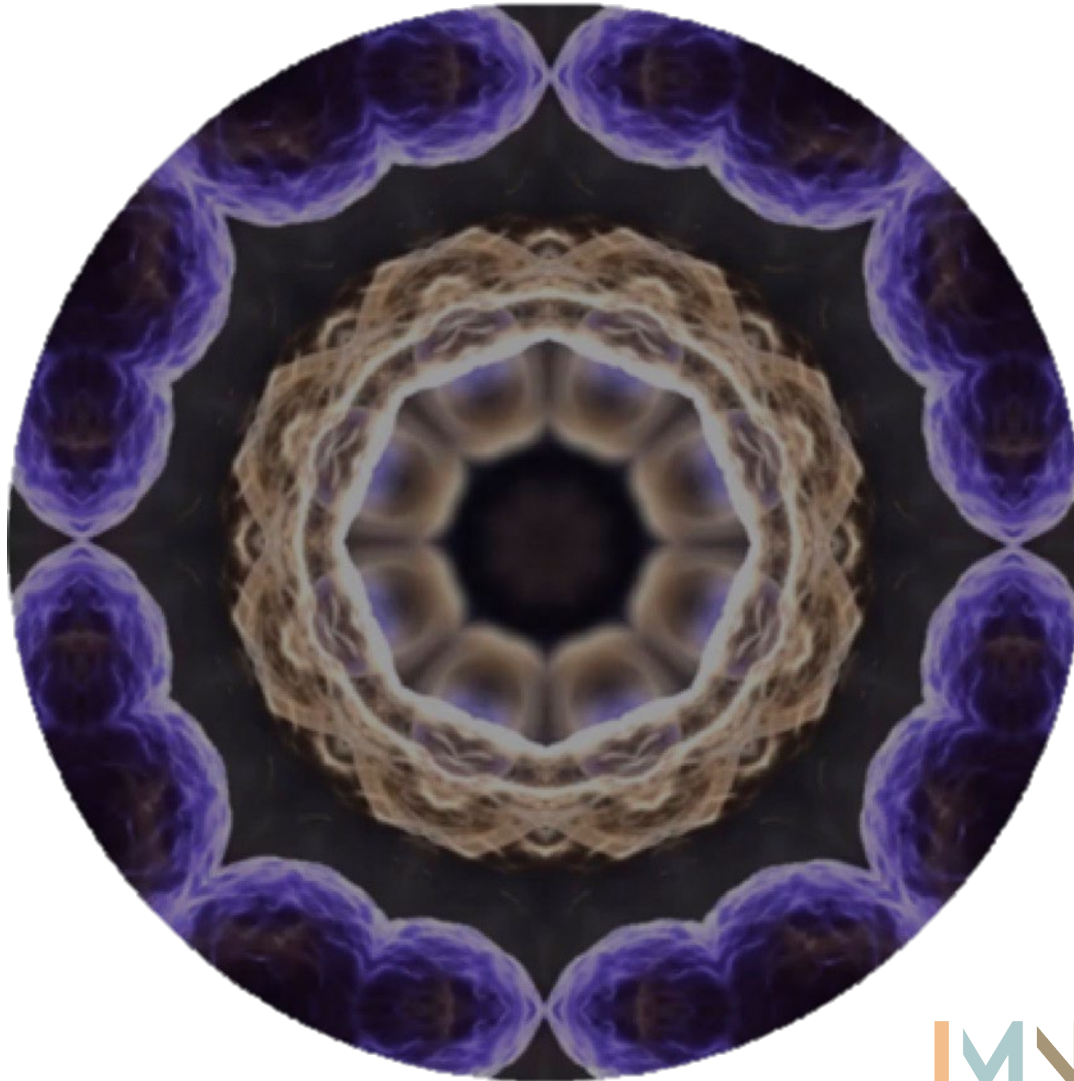
The sex of researchers affects the language of research papers

A paper just out in the BMJ, a medical-research journal, offers some support for the idea that men promote themselves more, and that this helps their careers

DIFFERENCE IN PREVALENCE OF POSITIVE WORDS IN CLINICAL-RESEARCH ARTICLE*, 2002-17



* With male first or last author, relative to papers with female first and last author



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