

Using Stereology To Quantify Renal Structural Pathology Inaugural Stereology And Its Application In Kidney Disease

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Using Stereology To Quantify Renal

Using Stereology to Quantify Renal Structural Pathology: Inaugural Stereology and Its Application in Kidney Disease Symposium, Marina Del Rey, Calif., May 2010: Proceedings 1st Edition by S.B. Nicholas (Editor), K.C. Norris (Editor)

Using Stereology to Quantify Renal Structural Pathology ...

In this supplement of the American Journal of Nephrology, we provide several original papers from the Proceedings from the Inaugural Stereology and Its Application in Kidney Disease Symposium: 'Using Stereology to Quantify Renal Structural Pathology', May 19–21, 2010, that demonstrate the utility of stereologic methods to investigate key features of chronic kidney diseases in both humans and animal models. Teiken et al. (this issue) describe the salient aspects of the OVE26 transgenic ...

Using Stereologic Techniques for Podocyte Counting in the ...

The highly specialized architecture of the renal glomerulus is altered in a variety of disease states. Morphometric methods, including stereological methods, have been widely used to analyze these changes in both animal and human glomeruli. However, many of the methods available until recently were biased and provided incomplete information.

Analyzing Renal Glomeruli with the New Stereology ...

The number, size and distribution of the nephron components contain relevant information on renal function. Stereology is a branch of morphometry that applies mathematical principles to obtain three-dimensional information from serial, parallel and equidistant two-dimensional microscopic sections.

Practical application of stereological kidney methods in ...

A strength of these experiments is extensive investigation across a spectrum of renal injury using rigorous methods, including unbiased stereology, thus, demonstrating an association between tubular epithelial cell death and the novel metric of renal function. Development of rapid, noninvasive, and nontoxic methods to measure GFR is critical to translational research in kidney disease.

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Determination of renal function and injury using near ...

Stereology is the discipline concerned with the quantitative analysis of three-dimensional structures. With stereology one can estimate the total number of glomeruli in kidneys, as well as mean glomerular volume, the number of cells in glomeruli, and the length and surface area of glomerular capillaries.

Glomerular stereology: Why, what and how to measure ...

The volume of each kidney was measured from MR images using the stereology method (Figure 1). The stereology method has been widely used for image-based volumetric measurements of a variety of organs (7,14-21) because it provides a fast and reliable measurement of the area of an object. Its measurement is based on counting the number of intersections of a randomly oriented and positioned grid over the object.

MRI-based Kidney Volume Measurements in ADPKD: Reliability ...

TKV has become the gold-standard image biomarker for ADPKD progression at early stages of the disease and is used in clinical trials to characterize treatment efficacy. Automated methods to segment the kidneys and measure TKV are desirable because of the long time requirement for manual approaches such as stereology or planimetry tracings.

Automatic total kidney volume measurement on follow-up ...

Date: April 21, 2020 Unbiased Stereology: Online Question and Answer Session with MBF Bioscience. Dr. Dan Peruzzi, stereology educator and staff scientist at MBF Bioscience, covers both theoretical and practical aspects regarding the use of unbiased stereology to quantify morphological parameters of tissue observed under a microscope or a slide scanner.

Stereology | The definitive source for stereology information

Dr. Nicholas' research interests are to: understand and identify key factors that promote the pathogenesis of diabetic kidney disease (DKD); uncover and validate novel biomarkers that may predict DKD progression; and to quantify renal structural changes associated with DKD in response to novel therapeutics, using stereology principles.

Susanne B. Nicholas, MD, PhD : Medicine, Nephrology - Los ...

MRI/CT-calculated Total Kidney Volume Total kidney volume (TKV) is a strong predictor of future renal insufficiency in ADPKD. 1 Various imaging modalities (MRI, CT, US) and post processing methods (stereology and ellipsoid calculations) are available to determine TKV. 1,2

Using Total Kidney Volume (TKV) to Assess Disease ...

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Research Faculty - UCLA Nephrology - Los Angeles, CA

Fluorochrome-B stained kidney sections were analyzed using three methods to quantify cell death: gold standard stereology using a controlled stage and commercially-available software, unbiased stereology using the novel ImageJ macro, and quantitative 2D morphometry also using the novel macro.

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Automated systematic random sampling and Cavalieri ...

Each kidney was segmented using a stereology technique, by counting the number of intersections of a randomly positioned grid over the organ . Stereology was performed using the ImageJ Grid plugin (rsb.info.nih.gov/ij/plugins/grid.html), the grid comprising crosses placed on the 3D stack with 16 x 16 mm grid spacing, 16 mm slice thickness for MR images and 15 x 15 mm spacing, 15 mm slice thickness for CT images.

Kidney volume measurement methods for clinical studies on ...

Ex vivo MRI has become a reliable method to measure N glom and has been validated by stereology in Os +/- and healthy WT mice . Thus, we used ex vivo MRI to validate the value of N glom in each mouse kidney.

In vivo measurements of kidney glomerular number and size ...

Novel molecular imaging techniques, using targeted magnetic nanoparticles that exploit the characteristics of the endogenous protein, ferritin, have been developed in conjunction with MRI to count every perfused glomerulus in the kidney and measure their individual volumes.

MRI-detectable nanoparticles: the potential role in the ...

Dr. Dan Peruzzi, stereology educator and staff scientist at MBF Bioscience, will be hosting a new question and answer session on unbiased stereology. He will cover both theoretical and practical aspects regarding the use of unbiased stereology to quantify morphological parameters of tissue observed under a microscope or a slide scanner.

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The goal of this work was to nondestructively measure glomerular (and thereby nephron) number in the whole kidney. Variations in the number and size of glomeruli have been linked to many renal and ...

(PDF) Measuring glomerular number and size in perfused ...

Total kidney volume may be measured using stereology techniques, in which area measurements and slice thickness of a series of contiguous images are used to determine the kidney volume.

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