

# ZERO-TIME KIDNEY HISTOLOGY PREDICTS EARLY GRAFT FUNCTION

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## Objectives

- To determine the impact of histological factors observed in zero-time biopsies on 3 years post transplant kidney allograft function.
- To compare the semi-quantitative Banff Classification with digital

## Methods

- Biopsies from allograft kidney cadaver performed at implantation time in the last three years (2005-2007), with at least three year follow-up, are reviewed.
- Chronic changes in glomeruli, vessels, tubules and interstitium (Cg, Ah, Cv, Ct, Ci) were semi quantitatively scored (0-3) using the Banff Working Classification. Glomerulosclerosis (GE) and GE / Total glomerulus are registered.
- By adding these individual chronic changes a Banff Chronic Sum Score was generated.
- Sirius Picro Red staining was used for identification of collagen I and III under polarized light. (Fig.1)
- Percentage of cortical biopsy area stained was quantified using a computer program (Leica® system).
- Glomerular filtration rate (GFR) at 3 years was calculated according to Cockcroft-Gault formula

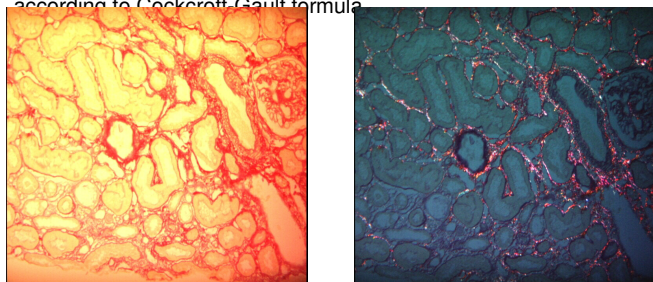


Figure 1

## Results

- 63 biopsies evaluated.
- Immunosuppressive protocols included induction with ATG or Basiliximab, calcineurin inhibitors (tacrolimus in 86,9%) or mTOR inhibitors (7,1%) plus mycophenolate mofetil and prednisolone.
- The histological, clinical features and three years GFR value are described in Tables 1 and 2.

	Mean	Median	SD
PSR (%)	1.62	1.50	±1.07
Ct	0.15	0.00	±0.51
Ci	0.14	0.00	±0.50
Cg	0.00	0.00	±0.00
Cv	0.39	0.00	±0.63
Banff chronic Sum	0.68	0.00	±1.34
Ah	0.28	0.00	±0.55
GE	0.35	0.00	±0.66
GE/TG	0.03	0.00	±0.07

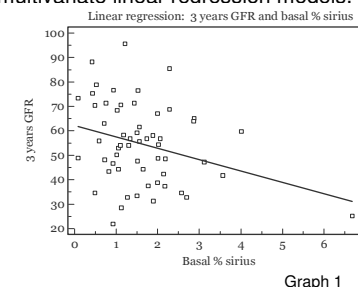
Table 1

	Mean	Median	SD
Receptor age ( years)	50.1	53.0	± 11.1
Donor age (years)	48.8	51.1	±13.6
Total HLA Match (n)	2.90	3.00	±0.90
DR HLA Match (n)	1.40	1.00	±0.60
Cold ischemia ( hours)	16.3	16.1	±2.80
3 years GFR ( ml/min/1.73)	54.6	54.3	±16.5
Receptor gender (n)	♀=23	♂=40	
Donor gender (n)	♀=24	♂=39	
Painel reactivity antibody (n)	<25% 57	25-75% 4	>75% 2

Table 2

## Results

- A significant negative linear regression between %PSR/ GFR at 3 year post-transplantation was established. (Graph 1)
- A significant negative correlation between the individual Banff scores, Ah, BCS and 3 years GFR were found.
- No correlation was found between SG, SG/TG and 3 years GFR.
- No correlation was present between fibrosis parameters evaluated by semi-quantitative and digital methods.
- BCS and donor kidney age had significant negative predictive value in multivariate linear regression models.



Graph 1

## Conclusions

- The % cortical area stained by Sirius predicts short term kidney function in univariable linear regression but involves extra-routine and expensive-time work.
- We think that Sirius Picro Red must be regarded as a research instrument.
- The Banff chronic sum seems a good and easy to perform tool, available to every pathologist, with significant predictive short-term value.