AMDCC Summer Student Report

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HYPOTHESIS

The hypothesis of our proposal was that based on our data that renal accumulation of cholesterol and triglycerides play an important role in diabetic nephropathy, potentially alterations in serum cholesterol and triglycerides could correlate with albuminuria and/or renal pathology as determined by glomerular expansion based on PAS staining.

RESULTS

We analyzed deposited data through the AMDCC website. While urinary albumin, serum total cholesterol (but not LDL or HDL cholesterol), and serum triglyceride data were readily available, there was limited data on glomerular mesangial index quantification.

Serum Cholesterol versus Urinary Albumin

As shown in **Figures 1-4** for the strains listed below, including the BTBR mice, there was a positive correlation between serum total cholesterol (TC) and urinary albumin (ualb).

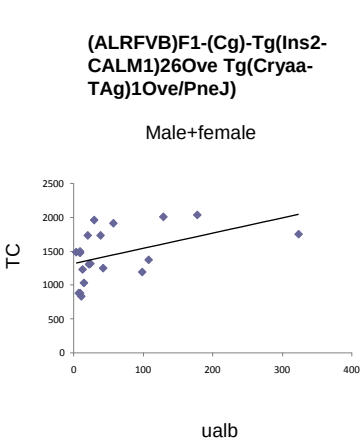

Figure 1

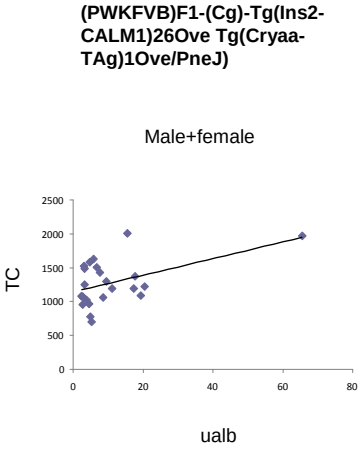

Figure 2

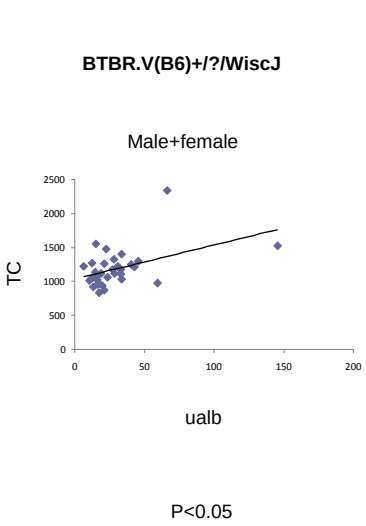

Figure 3

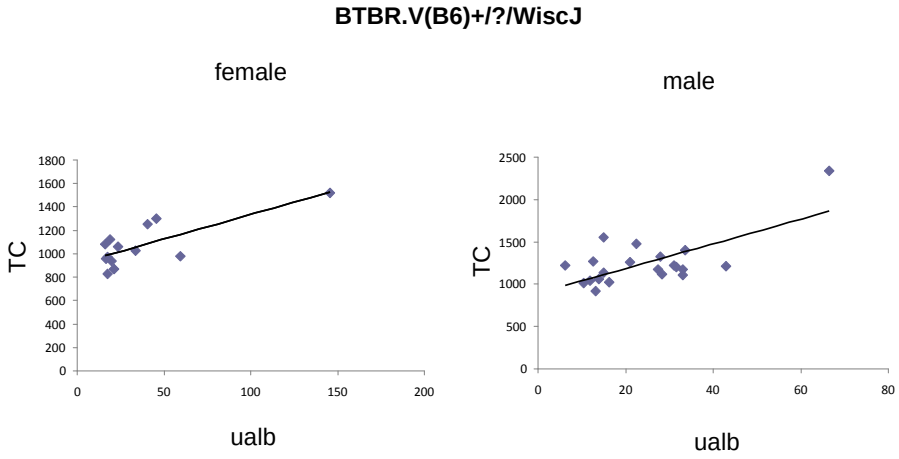

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Figure 4

As shown in **Figure 5** the picture was mixed for C57BL/6 mice where the correlation was positive for females and negative for males.

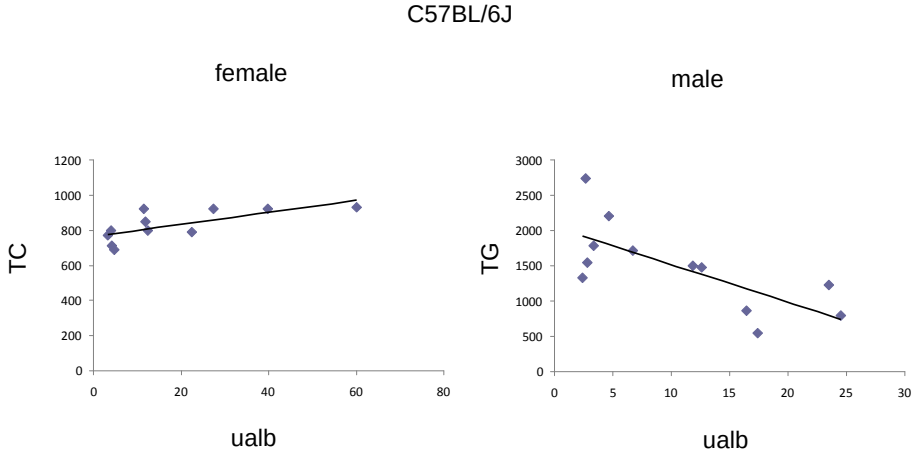

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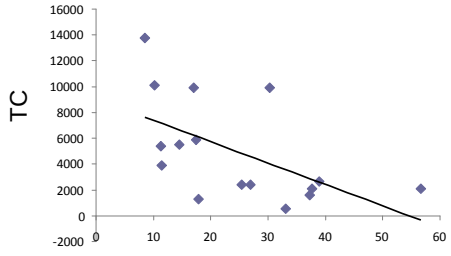
Figure 5

On the other hand as shown in **Figures 6-9** in several strains we found a negative correlation between serum total cholesterol (TC) and urinary albumin (ualb).

FVB(Cg)-Tg(Ins2-CALM1)26Ove
Tg(Cryaa-TAg)1Ove/PneJ

female



male

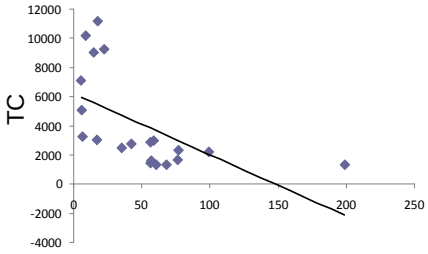


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Figure 6

FVB(Cg)-Tg(Ins2-CALM1)26Ove
Tg(Cryaa-TAg)1Ove/PneJ

Male+female

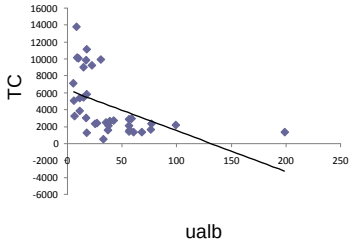

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Figure 7

B6.129S7-Ldlrtm1Her /J

male

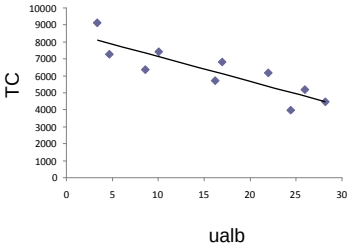

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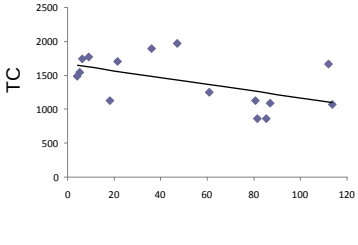
Figure 8

FVB/NJ

Male+female



P<0.05

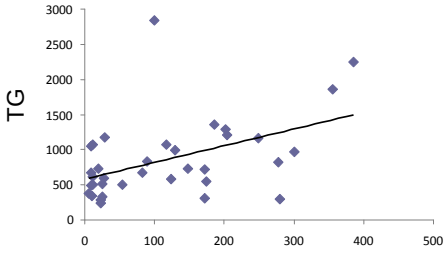
Figure 9

Serum Triglyceride versus Urinary Albumin

As shown in **Figure 10** in Akita mice, there was a positive correlation between serum total triglyceride (TG) and urinary albumin (ualb).

C57BL/6J-Ins2Akita

male



ualb

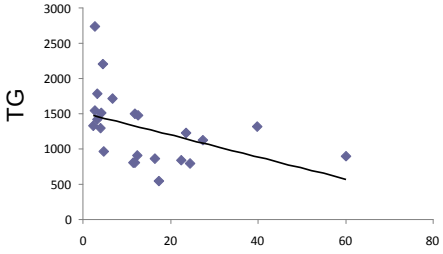
P<0.05

Figure 10

However as shown in **Figures 11-13** in several strains we found a negative correlation between serum total triglyceride (TG) and urinary albumin (ualb).

C57BL/6J

Male+female



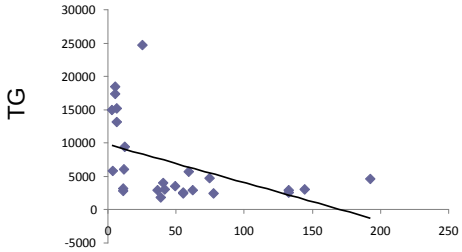
ualb

P<0.05

Figure 11

(NONFVB)F1-(Cg)-Tg(Ins2-CALM1)26Ove Tg(Cryaa-TAg)1Ove/PneJ

Male+female

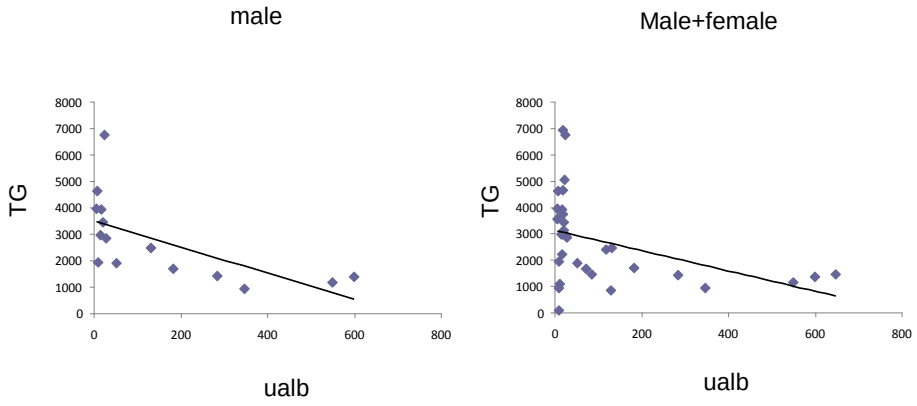


ualb

P<0.05

Figure 12

129S6.Cg-Nos3tm1Unc Ins2Akita/J



P<0.05

Figure 13

CONCLUSION

The correlations between serum lipids and urinary albumin are not always predictable. However retrospectively this is not very different than serum lipids versus atherosclerosis, coronary artery disease, or non alcoholic fatty liver disease where serum lipids do not always correlate with target tissue lipid accumulation and tissue pathology.

A better correlation is likely to exist between kidney lipids versus glomerular pathology and urinary albumin excretion.