**Supplemental Table 1.** Summary of study characteristics.

| Study | Population | Technique | Significant Findings |
|---|---|---|---|
| Mischak et al., 2004[1] | Case: 112 T2D adults with varying UAE<br>46 normal (< 20 mg/L)<br>45 low grade (> 20 mg/L)<br>21 high grade (> 100 mg/L)<br>Control: 39 healthy non-smoker adults<br>All: had baseline SCr concentrations of < 1.3 mg/dl; no heart failure, cancer, and chronic inflammatory disease | CE-MS/MS; >800 Da cut-off with ≥ 2 charge states; MosaiquesVisu and Mascot software | *Associated with renal as indicated by increased UAE*<br>- ↑ ALB<br>- ↓ INSL3, UMOD |
| Meier et al., 2005[2] | Case: 44 T1D adolescents<br>Control: 9 healthy age-matched volunteers | CE-MS; >800 Da cut-off with ≥2 charge states; MosaiquesVisu software | Identified a urinary protein pattern for early nephropathy that was different from that of controls |
| Jain et al., 2005[3] | Case: 100 T2D adults with microalbuminuria<br>Control: 20 healthy adults<br>18 with diabetes and normoalbuminuria<br>1 without diabetes and with microalbuminuria<br>1 without microalbuminuria and diabetes | 2DE and MALDI-MS/MS; 5-mL cut-off; 'Ettan MALDI Software' with 'proteo Metrics LLC' search engine | *T2D with microalbuminuria v. controls*<br>- ↑ AMBP, AZGP1, ORM |
| Sharma et al., 2005[4] | Case: 3 adults with macroalbuminuria and impaired renal function<br>2 T1D and 1 T2D<br>Control: 5 healthy adults | Fluorescence-based DIGE and SELDI-MS/MS; Profound search engine and Mascot software | *Diabetic nephropathy v. controls*<br>- ↑ SERPINA1<br>Validated SERPINA1 via ELISA |
| Dihazi et al., 2007[5] | Case: 117 adults with varying disease<br>38 with T2D nephropathy<br>45 with uncomplicated T2D<br>34 with non-diabetic nephropathy<br>Control: 45 healthy adults | GE and SELDI-MS/MS; >1kDa cut-off; MSDB and SwissProt dabatases; ProteinChip array | *Diabetic nephropathy v. controls*<br>- ↑ B2M<br>- ↓ UBA52 |

| Study | Population | Technique | Significant Findings |
|---|---|---|---|
| Otu et al., 2007[6] | Case: 31 T2D adults with nephropathy<br>Control: 31 T2D adults with normoalbuminuria; matched for diabetes duration, age, sex, and BMI<br>All: had baseline SCr concentrations of ≤ 1.2 mg/dl; Pima Indians | SELDI-MS; 2-40 kDa range with ≥2 signal-to-noise ratio Ciphergen Biomarker Wizard software | Identified a urinary protein pattern for T2D nephropathy cases that was different from that of controls<br>Survivor bias due to case-control design; unknown stability of urine samples stored for 10 years |
| Rao et al., 2007[7] | Case: 33 T2D adults with varying UAE<br>10 with normoalbuminuria<br>13 with microalbuminuria<br>10 with macroalbuminuria<br>Control: 9 healthy adults | DIGE-MS/MS; immunodepletion of abundant serum proteins; Protein-Lynx Global Server software using SwissProt database | *T1D with macroalbuminuria v. normoalbuminuria*<br>- ↑ A1BG, AHSG, AZGP1, GC, HPX, LRG1, SERPINA1, S100A9<br>- ↓ AMBP, APOA1, RBP, TTR |
| Bellei et al., 2008[8] | Case: 24 T2D adults with varying UAE<br>10 with normoalbuminuria<br>13 with micro- or macroalbuminuria<br>Control: 12 healthy adults | 2DE and LC-MS/MS; Mascot software using SwissProt Database | *T2D nephropathy v. T2D and controls*<br>- ↑ APOH, B2M, CAH, IGKC, RBP, TTR<br>- ↓ PPAP, RNA3, KLK3 |
| Rossing et al., 2008[9] | Case: 89 T1D adults with varying UAE<br>30 with normoalbuminuria<br>29 with microalbuminuria<br>30 with macroalbuminuria<br>Control: 30 healthy adults | CE-MS and LC-MALDI-MS/MS; <30 kDa cut-off; MosaiquesVisu software | *T1D with normoalbuminuria v. controls*<br>- ↓ COL1A1, UMOD<br>*T1D with macroalbuminuria v. microalbuminuria*<br>- ↑ ALB, AHSG, B2M, SERPINA1, TTR<br>- ↓ COL (1A1, 1A2, 3A1), FGB, PGRMC1, PSORS1C2, UMOD |
| Lapolla et al., 2009[10] | Case: 30 adults with varying diseases<br>10 T2D without nephropathy<br>10 T2D with nephropathy<br>10 non-diabetic nephropathy<br>Control: 10 healthy adults | LC-MS/MS; <30 kDa cut-off; ProteinPilot v2.1 using Uniprot Database | *T2D nephropathy v. T2D and controls*<br>- ↓ COL1A1, UMOD |

| Study | Population | Technique | Significant Findings |
|---|---|---|---|
| Jiang et al., 2009[11] | Case: 162 T2D adults with varying UAE<br>54 with normoalbuminuria<br>54 with microalbuminuria<br>54 with macroalbuminuria or nephropathy<br>Control: 82 healthy adults; matched for age and sex<br>All: Of Chinese Han descent | Fluorescence-based DIGE and MALDI-MS/MS; Mascot software using Swiss-Prot/TrEMBL protein database | *T1D with micro- or macroalbuminuria v. controls*<br>- ↑ ORM<br>Validated ORM via immunoturbidimetry: increased urinary ORM levels was associated with worsening diabetic kidney disease |
| Jiang et al., 2009[12] | Case: 12 adults with nephropathy<br>6 T1D and 6 T2D<br>Control: 6 healthy adults; matched for age and sex<br>All: Of Chinese Han descent | 2DE and MALDI-MS/MS; Mascot software using Swiss-Prot/TrEMBL protein database; | *Diabetic nephropathy v. controls*<br>- ↑ ALB, AZGP1, ECAD, IGKC, KNG, PTGDS, ORM, RBP<br>- ↓ AMBP, HP, TTR, UMOD<br>Validated ECAD via ELISA: increased urinary ECAD levels was associated with worsening diabetic kidney disease |
| Merchant et al., 2009[13] | Case: 21 T1D progressors with declining renal function<br>Control: 40 stable T1D non-progressors<br>All: from the Joslin Study of the Natural History of Microalbuminuria in Type 1 Diabetes | LC-MALDI-MS and MALDI-MS/MS; <10 kDa cut-off; Mascot Software using NCBInr 20060712 database | *Progressors v. non-progressors*<br>- ↑ FAT2, IPPK, TJP3<br>- ↓ COL4A1, COL5A1, TNX |
| Snell-Bergeon et al., 2009[14a] | Case: 19 adults with coronary artery disease<br>12 with and 4 without T1D<br>Control: 19 adults without coronary artery disease; matched for age, diabetes status and duration, and sex<br>All: from the Coronary Artery Calcification in Type I Diabetes (CACTI) study | CE-MS; <20 kDa cut-off MosaiquesVisu software | - Validated urinary protein patterns identified by and described in Rossing et al 2008 for T1D and T1D nephropathy |
| Thrailkill et al., 2009[15] | Case: 24 T1D adults with varying UAE<br>12 normoalbuminuria<br>12 microalbuminuria<br>Control: 12 healthy adults | Fluorescence-based DIGE and LC-MS/MS; >3 kDa; Mascot and Scaffold software | *T1D with microalbuminuria v. other groups*<br>- ↑CLU, CUBN, GC, LRP2, RBP4, EGF, TF, ALB |

| Study | Population | Technique | Significant Findings |
|---|---|---|---|
| Alkhalaf et al., 2010[16b] | Case: 64 T2D adults with nephropathy and retinopathy<br>Control: 82 T2D adults with normoalbuminuria<br>All: from the Prevention of Diabetic Complications (PREDICTIONS) study; aged 35-75 years and had diabetes for ≥5 years | CE-MS and CE-MS/MS; <20 kDa cut-off; Mascot software using the SwissProt database | *Diabetic nephropathy v. controls*<br>- ↑AHSG, ALB, B2M, SERPINA1, TTR<br>- ↓CD99, COL (1A1, 1A2, 3A1), UMOD |
| Maahs et al., 2010[17a] | Case: 587 diabetic adults (299 T1D)<br>369 with and 218 without impaired renal function (ACR >30 mg/g or GFR >60 ml/min)<br>Control: 315 healthy adults<br>All: from 10 different hospital centers in the US, Europe and Australia | CE-MS/MS; <20 kDa cut-off; Mascot and MDSB Protein database | *T1D and T2D v. controls*<br>- ↑FG (A, B), SERPINA1,<br>- ↓COL (1A1, 1A2, 2A1, 3A1, 8A2), PGRMC1<br>*T2D v. T1D and controls*<br>- ↓COL (1A1, 1A2)<br>*T1D v. controls*<br>- ↓ UMOD |
| Riaz et al., 2010[18] | Case: 100 T2D patients<br>Control: 43 healthy adults; matched for age and sex<br>All: from a double-blind placebo-controlled randomized clinical trial in Lahore, Pakistan | SDS-PAGE and LC-MALDI-MS/MS; Mascot software using the SwissProt database; ELISA for candidate validation | *T2D v. controls*<br>- ↑ALB, AZGP1, ECAD, RBP4<br>- ↓AMBP, HP, TTR<br>Verified all 7 candidates via ELISA |
| Wu et al., 2011[19] | Case: 75 T2D adults with varying UAE<br>30 normoalbuminuria<br>25 microalbuminuria<br>20 macroalbuminuria<br>Control: 20 healthy sex-matched adults | ProteinChip H50 array; SELDI-MS; < 80 kDa; support vector machine learning | Identified 4 ion fragments with differential excretion between T2D adults with microalbuminuria and normoalbuminuria |
| Jin et al., 2012[20] | Case: 43 T2D adults with diabetic retinopathy and persistent microalbuminuria<br>Control: 43 T2D healthy adults; matched for age, sex, BMI, and diabetes duration | LC-MS/MS; >3 kDa cut-off; ProteinPilot v.2.0.1 and the Paragon algorithm; iTRAQ for quantification; MRM for candidate validation | *T2D with microalbuminuria v. T2D controls*<br>- ↑CP, GC, HP, PSCA, ORM1, SERPINA1, TF<br>- ↓FABP, HSPG2, MASP2<br>Verified HP, ORM, PSCA, SERPINA1, and TF via MRM |

| Study | Population | Technique | Significant Findings |
|---|---|---|---|
| Schlatzer et al., 2012[21] | Case: 13 T1D progressors who developed micro- or macroalbuminuria<br>Control: 11 T1D non-progressors; matched for diabetes duration and age<br>All: from CACTI study | LC-MS/MS; unknown cut-off; Proteomarker and Mascot softwares | *Progressors v. non-progressors*<br>- ↑ORM<br>- ↓CLU, GRN, UMOD<br>Verified all 4 candidates via ELISA |
| Soggiu et al., 2012[22] | Case: 20 T1D adults with varying UAE<br>16 normoalbuminuria<br>4 microalbuminuria<br>Control: 10 healthy adults | MALDI-MS and LC-MS/MS; >10 kDa cut-off; Mascot software | *T1D (particularly with microalbuminuria) v. controls*<br>- ↑A1BG, AMBP, AZGP1, RBP4<br>- ↓APO (A1, E), CD59, HMWK, UMOD |
| Zürbig et al., 2012[23c] | Case: 15 diabetic progressors who developed macroalbuminuria<br>6 T1D and 9 T2D<br>Control: 20 diabetic non-progressors who remained normoalbuminuric<br>10 T1D and10 T2D | CE-MS; <20 kDa cut-off; MosaiquesVisu software | *Progressors v. non-progressors*<br>- ↑ALB, SERPINA1<br>- ↓COL1A1, CD99, CLU, PIGR, UMOD |
| Bhensdadia et al., 2013[24] | Case: 4 T2D progressors (UAE increased by >60% by the end of follow-up) with worsening SCr<br>Control: 4 T2D non-progressors with stable SCr; matched for baseline SCr and UAE<br>All: from Veterans Affairs Diabetes Trial (VADT) | LC-MS/MS; Mascot software and Scaffold; selected reaction monitoring (SRM) and ELISA for validation | *Progressors v. non-progressors*<br>- ↑AGRN, AGT, HP, MASP2<br>- ↓LAMP<br>Verified the 5 markers above, UMOD, and NGAL in 30 adults via SRM; validated HP via ELISA in 204 adults |
| Chu et al., 2013[25] | Case: 28 uncomplicated T2D adults<br>Control: 29 healthy adults | LC-MALDI-MS/MS; 10 kDa cut-off; Bioworks Browser | *T2D v. controls*<br>- ↓CLU, EPRS, HINT1 |
| Roscioni et al., 2013[26c] | Case: 44 T2D progressors with worsening UAE<br>Control: 44 T2D non-progressors<br>All: from the Prevention of Renal and Vascular End-stage Disease (PREVEND) study | CE-MS/MS; <20 kDa cut-off; MosaiquesVisu software | *Progressors v. non-progressors*<br>- ↑AHSG<br>- ↓COL1A1<br>*Associated with UAE*<br>- ↑AHSG, ALB, SERPINA1<br>- ↓COL1A1, UMOD |

| Study | Population | Technique | Significant Findings |
|---|---|---|---|
| Siwy et al., 2014[27c] | Case: 87 T2D adults with nephropathy<br>Control: 78 T2D adults with normoalbuminuria<br>All: from the Proteomic Prediction and Renin Angiotensin Aldosterone System Inhibition Prevention of Early Diabetic Nephropathy In Type 2 diabetic adults with normoalbuminuria (PRIORITY) trial | CE-MS; <20 kDa cut-off; MosaiquesVisu software | *T2D nephropathy v. control*<br>- ↑A1BG, AHSG, ALB, APOA1, B2M, SERPIN (A1, C1), TTR<br>- ↓CD99, COL (1A1, 1A2), FXYD2, FGA, PGRMC1, PIGR |
| Lewandowicz et al., 2015[28] | Case: 72 T2D adults<br>33 without retinopathy or nephropathy<br>15 with diabetic retinopathy<br>24 with diabetic nephropathy (and retinopathy)<br>Control: 27 healthy adults matched for age and sex | LC-MS/MS; unknown cut-off; iTRAQ quantitation; Mascot Software | *T2D nephropathy v. control*<br>- ↑ ALB, SERPINA1<br>- ↓ COL1A1, HSPG2<br>*T2D v. control*<br>- ↑ ALB, PTGDS, SPP1<br>- ↓ ACTB, APOA1, COL1A1, HSPG2 |
| Suh et al., 2015[29] | Case: 40 T1D children and adolescents<br>Control: 41 healthy age-matched siblings | SDS-PAGE and FASP; LC-MS/MS; > 30 kDa; Mascot Software and Protein Prophet | *T1D v. control*<br>- ↑ ENPEP, NAGA, MAN2B1, CTSC, FUCA1, ASAH1, GNS, FUCA2. DPP7, CPQ, HEXB, CTSB, LRG1, CST2, RBP, APOM, GAS6, GP5, TIMP1, SLC3A2, SELL, CDH5, MCAM, MSLN, PI16, VCAM1, COLEC12, ALCAM, ACE2, ERP44, HK3, GSN<br>- ↓ LAMP, KNG1, ACY3, AMN, ERP MGAM, IGFLR1, MADCAM1, CPM, RNF149, TOLLIP, HRSP12, CTTN<br>Verified 6 proteins (FUCA2, NAGA, COLEC-12, CD166, TIMP1, and APOM) via Western Blot. (*These proteins were subsequently used into our bioinformatic analyses*.) |

| Study | Population | Technique | Significant Findings |
|---|---|---|---|
| Zhang et al., 2015[30] | Case: 49 T2D adults divided into groups based HbA1c levels [BM] and fasting plasma glucose levels [GM]<br>Control: 29 healthy adults matched for age and sex | LC-MALDI-MS/MS; <10 kDa cut-off; ClinProt software using the IPI human database | *T2D v. control*<br>- ↑ FGA, F2<br>*T2D in high BM group v. low BM group*<br>- ↑ FGA, F2 |
| Fu et al., 2016[31] | Case: 28 T2D adults with microalbuminuria<br>Control: 30 T2D adults with normoalbuminuria | LC-MALDI-MS/MS; <10 kDa cut-off; ClinProt software using the IPI human database | *T2D with microalbuminuria v. T2D controls*<br>- ↑ F2, FGA, VTN<br>- ↓ F2, FGA ITIH4, VTN<br>Peptides of F2, FGA, and VTN were increased and decreased<br>Verified via MALDI-TOF-MS/MS |

[a]Studies that also validated the diabetes7 model[14]

[b]Studies that also validated the Rossing peptidome[9]

[c]Studies that also validated the CKD273 classifier[32]

2DE, two-dimensional gel electrophoresis; CE, capillary electrophoresis; DIGE, difference gel electrophoresis; ELISA, enzyme-linked immunosorbent assay; GE, gel electrophoresis; LC, liquid chromatography; MALDI, Matrix-assisted laser desorption/ionization; MRM, multiple reaction monitoring; SRM, selected reaction monitoring; T1D, type 1 diabetes; T2D, type 2 diabetes; UAE, urinary albumin excretion.