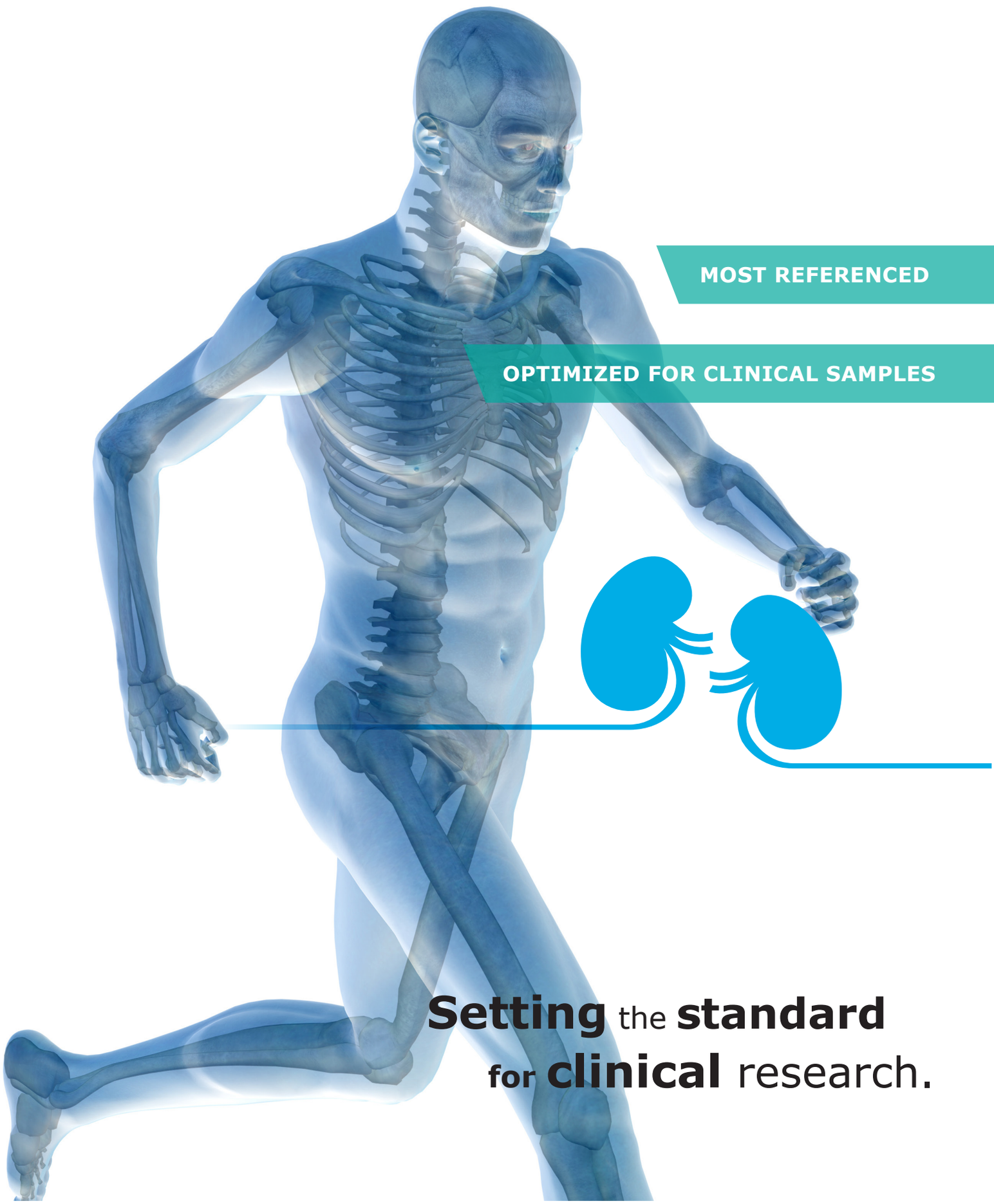
SCLEROSTIN in NEPHROLOGY

BIOMEDICA



MOST REFERENCED

OPTIMIZED FOR CLINICAL SAMPLES

Setting the **standard**
for clinical research.

URINE PROTOCOL AVAILABLE

SCLEROSTIN – A BONE-RELATED PROTEIN

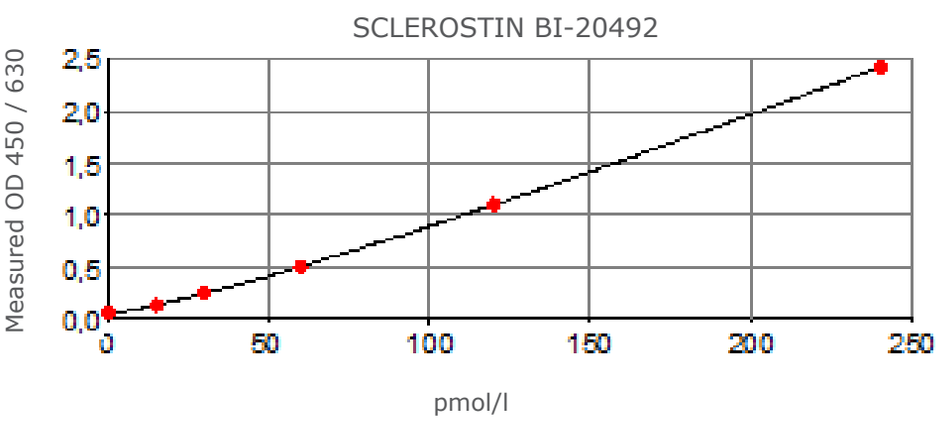
Sclerostin ELISA - Assay Characteristics

Method	Sandwich ELISA, HRP/TMB, 12x8-well strips			
Sample type	Serum, plasma (EDTA, heparin), urine protocol available			
Standard range	0 to 240 pmol/l (6 standards and 1 control in human serum matrix)			
Conversion factor	1 pg/ml = 0.044 pmol/l (MW: 22.5 kD)			
Sample volume	20 µl / well			
Sensitivity	LOD: (0 pmol/l + 3 SD): 3.2 pmol/l; LLOQ: <7.5 pmol/l			
Values of apparently healthy individuals	Median Serum (n=411): 24.14 pmol/l			
Incubation time, temperature	18-24 h / 1 h / 30 min, room temperature (18-24°C)			
Cross reactivity	The assay does not detect Wise (SOSTDC1) or Noggin. The assay does not cross react with rat or mouse Sclerostin.			
Precision	Intra-assay (n=8) ≤ 7% , Inter-assay (n=6) ≤ 10%			
Spike/Recovery	The mean recovery of recombinant Sclerostin in human serum samples (n=6) is 94%			
Dilution linearity	Dilution (serum samples):	1+1	1+3	1+7
	Endogenous Sclerostin	100%	113%	106%
	Recombinant Sclerostin	103%	93%	n.a.

Features and Benefits

- Fully validated – optimized for clinical samples
- Low sample volume – 20 µl/well
- Biologically reliable results – 6 serum based standards and control
- Convenient ready to use protocol

Typical Standard Curve

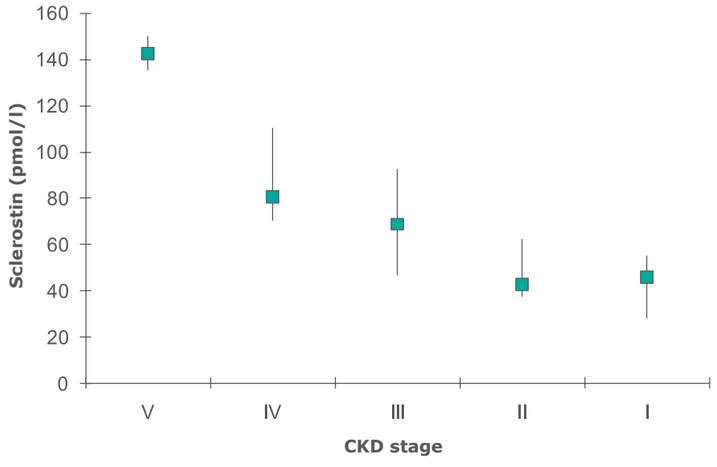


Studies evaluating the role of Sclerostin in patients in kidney disease.

Reference and First Author	Disease	Target Population / Study Design	Main Findings / Conclusion
Renal elimination of sclerostin increases with declining kidney function. *Cejka D et al., J Clin Endocrinol Metab, 2014; 99(1): 248–255*	Kidney Disease	Patients with CKD stage 1-5, n=120 *	"Increased sclerostin serum levels in CKD patients are not due to decreased renal elimination. On the contrary, renal elimination increases with declining kidney function."
Sclerostin Declines during Hemodialysis and Appears in Dialysate. *Bielesz BO et al., Blood Purif, 2014; 13;38(1): 30–36*		Prevalent hemodialysis patients, prospective study, n=54 *	"Sclerostin is dialysable. Sclerostin serum levels decrease during dialysis."
The Relation between Renal Function and Serum Sclerostin in Adult Patients with CKD. *Pelletier S et al., Clin J Am Soc Nephrol, 2013; 8: 819–823*		Patients with chronic kidney disease, n=90 *	"..higher serum Sclerostin levels starting at CKD stage III..."
Sclerostin and DKK-1 levels in pre-dialyisis CKD patients. *Behets G et al., Nephrol Dial Transplant, 2012; 27: ii36–ii37*		Patients with chronic kidney disease, cross-sectional observational study, n=149 *	"Serum Sclerostin levels but not DKK-1 levels increase along the progression of renal disease."
Bone Mineral Density and Serum Biochemical Predictors of Bone Loss in Patients with CKD on Dialysis. *Malluche HH et al., Clin J Am Soc Nephrol, 2014; 9: 1254–1262*	CKD-MBD	Patients from dialysis centers, prospective study, n=81	"The baseline serum biochemical parameters sclerostin and tartrate-resistant acid phosphatase-5b were noninvasive independent predictors of bone loss in CKD patients on dialysis."
Sclerostin serum levels correlate positively with bone mineral density and microarchitecture in haemodialysis patients. *Cejka D et al., Nephrol Dial Transplant, 2012; 27: 226–230*		Haemodialysis patients, cross-sectional study, n=76	"In dialysis patients serum Sclerostin levels correlate with BMD and bone volume and had significantly higher Sclerostin levels than controls."
Sclerostin: another bone-related protein related to all-cause mortality in haemo-dialysis? *Viaene L et al., Nephrol Dial, 2013; 28(12): 3024–3030*	Cardiovascular Events	Haemodialysis patients, post-hoc survival analysis, follow up study (637 days), n=100 *	"Higher circulating Sclerostin levels were associated with decreased mortality in prevalent HD patients."
Serum Sclerostin and adverse outcomes in nondialyzed chronic kidney disease patients. *Kanbay M et al., J Clin Endocrinol, 2014; 99(10): E1854–E1861*		Patients with CKD stage 3-5, n=173 *	"Serum sclerostin values are associated, even after multiple adjustments, with fatal and nonfatal cardiovascular events in a nondialyzed CKD population."
Serum Sclerostin levels are associated with aortic valve calcification in prevalent haemodialysis patients. *Türkvatan A et al., Nephrol Dial Transplant, 2013; 28: i19–i21*		Haemodialysis patients, cross–sectional study, n=101	"Patients with aortic valve calcification had significantly higher serum Sclerostin levels as compared to patients with no calcified aortic valves."
Circulating Sclerostin and Dickkopf-1 (DKK1) in predialysis chronic kidney disease (CKD): relationship with bone density and arterial stiffness. *Thambiah S et al., Calcif Tissue Int, 2012; 90(6): 473–480*		Patients with CKD stages 3B and 4, n=77 *	"..negative association between GFR and Sclerostin. Our data suggest that the Wnt pathway may play a role in CKD-MBD."
Association of Sclerostin levels with the severity of aortic valve calcification. *Koos et al., J Am Coll Cardiol, 2011; 57(14s1): E2026–E2026*		Patients with aortic valve disease, prospective cross sectional study, n=115	"Patients with AVC showed increased Sclerostin levels compared to a healthy reference population."
Osteoprotegerin and sclerostin in chronic kidney disease prior to dialysis: potential partners in vascular calcifications. *Morena et al., Nephrol Dial Transplant, 2015; 30: 1345–1356*		Non dialysis CKD patients, cross-sectional study, n=241	"..bone turnover inhibitors, OPG and sclerostin, are independently associated with CAC with potential additive effects in ND-CKD patients."
High levels of circulating sclerostin are associated with better cardiovascular sur-vival in incident dialysis patients: results from the NECOSAD study. *Drechsler C et al., Nephrol Dial Transplant, 2015; 30:288–293*		Incident dialysis patients, prospective cohort, 4-year follow up, n=673	"High levels of serum sclerostin are associated with lower short-term cardiovascular mortality in dialysis patients."
Circulating Wnt/β-catenin signalling inhibitors and uraemic vascular calcifications. *Yang et al., Nephrol Dial Transplant, 2015; 30: 1356–1363*		Haemodialysis patients, prospective observational cohort study, n=125	"In long-term haemodialysis patients, circulating sclerostin but not Dkk-1 is inversely associated with AoCs and future cardiovascular events."
Sclerostin Quo Vadis? - Is This a Useful Long-Term Mortality Parameter in Prevalent Hemodialysis Patients? *Nowak A et al., Kidney Blood Press Res, 2015; 40(3): 266–276*		Hemodialysis patients, prospective longitudinal study, 1461 days median follow up, n=239	"Higher FGF23, PTH, AP and lower 25(OH)vitamin D but not sclerostin predict long-term mortality. Sclerostin was negatively associated with FGF23, PTH and AP and lower in females than in males."
Clinical and biological determinants of sclerostin plasma concentration in hemo-dialysis patients. *Delanaye P et al., Nephron Clin Pract, 2014; 128(1-2): 127–134*		Hemodialysis patients, observational study, n=164	"..higher concentration of sclerostin in HD patients, a positive association with age and a negative association with PTH. ..no association was found between sclerostin and mortality."
The relationship between inhibitors of the Wnt signalling pathway (sclerostin and Dickkopf-1) and carotid intima-media thickness in postmenopausal women with type 2 diabetes mellitus. *Gaudio A et al., Diabetes and Vasc Dis Res, 2014; 11: 48–52*	Diabetes	T2DM postmenopausal women, cross-sectional study, n=40 *	"..sclerostin may protect against progression of vascular complications in diabetic patients..."
Gender differences in sclerostin and clinical characteristics in type 1 diabetes mellitus. *Catalano A et al., Eur J Endocrinol, 2014; 171: 293–300*		Patients with T1DM, cross-sectional study n=69 *	"..women with T1DM exhibit higher sclerostin levels than men and circulating sclerostin is not associated with bone turnover markers and phalangeal QUS measurements. Macroangiopathy was associated with sclerostin levels."
Sclerostin and Insulin Resistance in Prediabetes: Evidence of a Cross Talk Between Bone and Glucose Metabolism. *Daniele G et al., Diabetes Care, 2015; 38: 1509–1517*		Individuals: healthy normal glucose-tolerant (n=49), impaired glucose regulation (n=79), cross-sectional study *	"Sclerostin levels are increased in individuals with prediabetes and correlated with insulin resistance in skeletal muscle, liver, and adipose tissue."

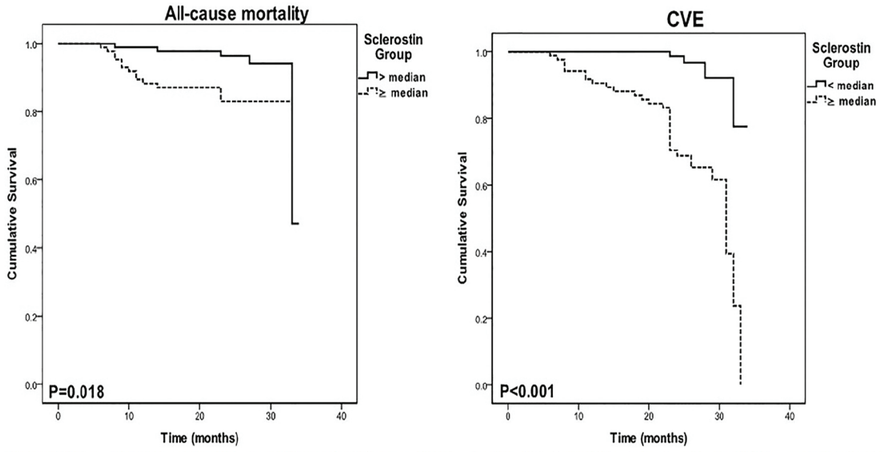
*Sclerostin measured with Biomedica Sclerostin ELISA

Serum Sclerostin as a function of CKD stage based on GFR measured by inulin clearance



From: Pelletier S et al., Clin J Am Soc Nephrol, 2013; 8: 819-823

Serum Sclerostin values are associated with fatal and nonfatal cardiovascular events in predialysis CKD cohort



Kaplan-Meier analysis for all-cause mortality and CVE according to median (63.5 pmol/L) sclerostin groups. CVE represents both fatal and nonfatal CVEs.

From: Kanbay M et al., Clin Endocrinol Metab, 2014, 99(10):E1854–E1861

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