

Disease/Patients	n	Findings	ReFiNE®	Quotation	Citation
Children with CKD stages 2-4 (ESCAPE n=231) and 3-5 (4C n=428)	659	The measurement of DKK3 in urine indicates active kidney damage regardless of the cause and predicts a significant loss of GFR (progression). The determination of Dkk3 in urine is therefore suitable for the individual monitoring of therapeutic measures to slow down progression in children and adolescents, regardless of the cause of CKD.	✓	Speer T. et al., 2023	Speer T, Schunk SJ, Sarakpi T, Schmit D, Wagner M, Arnold L, Zewinger S, Azukaitis K, Bayazit A, Obrycki L, Kaplan Bulut I, Duzova A, Doyon A, Ranchin B, Caliskan S, Harambat J, Yilmaz A, Alpay H, Lugani F, Balat A, Arbeiter K, Longo G, Melk A, Querfeld U, Wühl E, Mehls O, Fliser D, Schaefer F; 4C Study Investigators, ESCAPE Trial Investigators. Urinary DKK3 as a biomarker for short-term kidney function decline in children with chronic kidney disease: an observational cohort study. <i>Lancet Child Adolesc Health</i> . 2023 Jun;7(6):405-414. doi:10.1016/S2352-4642(23)00049-4.
ADPKD patients (n=184; adults (≥18 years; 26 excluded; 84 men and 74 women) + healthy controls (n=47)	205	Adding uDKK3 to current models of disease progression in ADPKD may improve their accuracy, especially when combined with copeptin.	✓	Arjune S. et al., 2023	Arjune S, Späth MR, Oehm S, Todorova P, Schunk SJ, Lettenmeier K, Chon SH, Bartram MP, Antczak P, Grundmann F, Fliser D, Müller RU. DKK3 as a potential novel biomarker in patients with autosomal polycystic kidney disease. <i>Clin Kidney J</i> . 2023 Oct 13;17(1):sfad262. doi: 10.1093/ckj/sfad262.
Patients with resistant HTN	31	In patients with resistant HTN, high uDKK3 levels are associated with a more pronounced future eGFR decline.	✓	Schäfer A. et al., 2023	Schäfer, A.-K.C.; Pieper, D.; Dihazi, H.; Dihazi, G.H.; Lüders, S.; Koziulek, M.J.; Wallbach, M. Urinary Dickkopf-3 (DKK3) Is Associated with Greater eGFR Loss in Patients with Resistant Hypertension. <i>J. Clin. Med</i> . 2023, 12, 1034. https://doi.org/10.3390/jcm12031034 .
Kidney transplant recipients	122	DKK3 could forecast graft function.	✓	Schuster A. et al., 2022	Schuster A, Steines L, Müller K, Zeman F, Findeisen P, Banas B, Bergler T. Dickkopf 3-A New Indicator for the Deterioration of Allograft Function After Kidney Transplantation. <i>Front Med (Lausanne)</i> . 2022 May 11;9:885018. doi: 10.3389/fmed.2022.885018.
COPD patients (≥ 40 years)	2314	The study highlights urinary DKK3 as a marker for early identification of patients at risk of progressive renal dysfunction in a population without CKD with preserved GFR and without significant proteinuria. In COPD patients, urinary DKK3 has been associated not only with declining eGFR but also with worsening lung function and unfavorable outcomes.	✓	Schunk SJ et al., 2021	Schunk SJ, Beisswenger C, Ritzmann F, Herr C, Wagner M, Triem S, Hütter G, Schmit D, Zewinger S, Sarakpi T, Honecker A, Mahadevan P, Boor P, Wagenpfeil S, Jörres R, Watz H, Welte T, Vogelmeier CF, Gröne HJ, Fliser D, Speer T, Bals R. Measurement of urinary Dickkopf-3 uncovered silent progressive kidney injury in patients with chronic obstructive pulmonary disease. <i>Kidney Int</i> . 2021 Nov;100(5):1081-1091. doi: 10.1016/j.kint.2021.06.029.
Patients with cardiac surgery	733	The study shows that patients with elevated urinary DKK3 prior to cardiac surgery or exposure to contrast media have a higher risk of acute kidney injury after surgery and of transition from acute kidney injury to chronic kidney disease. Thus, only patients with elevated urinary DKK3 prior to cardiac surgery benefit from therapeutic approaches to prevent acute kidney injury, such as remote ischemic conditioning.	✓	Schunk SJ et al., 2019	Schunk SJ, Zarbock A, Meersch M, Küllmar M, Kellum JA, Schmit D, Wagner M, Triem S, Wagenpfeil S, Gröne HJ, Schäfers HJ, Fliser D, Speer T, Zewinger S. Association between urinary dickkopf-3, acute kidney injury, and subsequent loss of kidney function in patients undergoing cardiac surgery: an observational cohort study. <i>Lancet</i> . 2019 Aug 10;394(10197):488-496. doi: 10.1016/S0140-6736(19)30769-X. Epub 2019 Jun 12. PMID: 31202596.
General population (n=481) compared to patients with CKD (n=575)* *hypertensive patients with CKD (n=184) and without (n=202) diabetes; patients with CKD of other etiology (n=189)	1056	The study shows that "[u]rinary DKK3 levels identify patients at high risk for eGFR decline over the next 12 months regardless of the cause of kidney injury and beyond established biomarkers, potentially providing a tool to monitor CKD progression and assess effects of interventions."	✓	Zewinger S. et al., 2018	Zewinger S, Rauen T, Rudnicki M, Federico G, Wagner M, Triem S, Schunk SJ, Petrakis I, Schmit D, Wagenpfeil S, Heine GH, Mayer G, Floege J, Fliser D, Gröne HJ, Speer T. Dickkopf-3 (DKK3) in Urine Identifies Patients with Short-Term Risk of eGFR Loss. <i>J Am Soc Nephrol</i> . 2018 Nov;29(11):2722-2733. doi:10.1681/ASN.2018040405.