

Overall research theme:

Studies of diabetic micro- and macrovascular complications with a special focus on diabetic nephropathy – genetic aspects and cardiovascular risk factors

Latest update:

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Senior staff member(s): Position(s):

Degrees:

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Hans-Henrik Parving	Professor	MD, DMSc	hhp@steno.dk
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Characteristics of the research group:

The research group is devoted to the prevention and understanding of late diabetic complications as well as to improvement of the prognosis for the patients suffering from diabetic nephropathy. Clinical explorative studies of pathogenetic mechanisms, physiology and clinical interventions have been conducted for the past 30 years.

Running projects: Titles and abstracts:

Identification of type 1 and type 2 diabetic patients at high risk for development and progression of diabetic nephropathy

- studies of genetic and non-genetic risk markers / factors in prospective observational studies, genetic studies and family studies

Improved treatment of diabetic nephropathy

- blockade of the renin-angiotensin-aldosterone system

Characterisation of genetic and non-genetic cardiovascular risk factors

- focus on natriuretic peptides especially NT-proBNP

Evaluation of gene expression

- at the mRNA level (micorarray) and proteomic patterns in serum and urine

Recent publications related to the projects described above:

- 1) Andersen S, Tarnow L, Cambien F, Rossing P, Juhl TR, Deinum J, Parving H-H: Renoprotective effects of losartan in diabetic nephropathy: interaction with ACE insertion/deletion genotype? *Kidney International* 2002; 62: 192-198
- 2) Neugebauer S, Tarnow L, Stehouwer C, Teerlink T, Baba T, Watanabe T, Parving H-H: Total plasma homocysteine is associated with hypertension in type 1 diabetic patients. *Diabetologia* 2002; 45: 1315-1324
- 3) Hansen HP, Rossing P, Tarnow L, Nielsen FS, Parving HH: Preventing diabetic nephropathy: an audit. *Scandinavian Journal of Clinical Investigations* 2001; 61(6): 471-477
- 4) Jacobsen P, Rossing P, Tarnow L, Hovind P, Parving H-H: Birth weight – a risk factor for progression in diabetic nephropathy? *Journal of Internal Medicine* 2003; 253: 343-350
- 5) Hovind P, Tarnow L, Rossing P, Parving H-H: Smoking and progression of diabetic nephropathy in type 1 diabetes. *Diabetes Care* 2003; 26: 911-916
- 6) Hovind P, Tarnow L, Rossing K, Rossing P, Eising S, Larsen N, Binder C, Parving H-H: Decreasing incidence of severe diabetic microangiopathy in type 1 diabetes. *Diabetes Care* 2003; 26: 1258-1264

- 7) Andersen S, Tarnow L, Cambien F, Rossing P, Juhl TR, Deinum J, Parving H-H: Long-term renoprotective effects of losartan in diabetic nephropathy. *Diabetes Care* 2003; 26: 1501-1506
- 8) Jacobsen P, Tarnow L, Carstensen B, Hovind P, Poirier O, Parving, H-H: Genetic variation in the rennin-angiotensin system and progression of diabetic nephropathy. *JASN* 2003; 14: 2843-2850
- 9) Tarnow L, Hovind P, Teerlink T, Stehouwer CDA, Parving, H-H: Elevated plasma ADMA as a marker of cardiovascular morbidity in early diabetic nephropathy in Type 1 diabetes. *Diabetes Care* 2004; 27: 765-769
- 10) Hovind P, Tarnow L, Rossing P, Jensen BR, Graae M, Torp I, Binder C, Parving H-H: Predictors for the development of microalbuminuria and macroalbuminuria in patients with type 1 diabetes: an inception cohort study. *BMJ* 2004
- 11) Hovind P, Tarnow L, Rossing P, Carstensen B, Parving H-H: Improved survival in patients obtaining remission of nephritic range albuminuria in diabetic nephropathy. *Kidney International* 2004; 66: 1180-1186
- 12) Gæde P, Tarnow L, Vedel P, Parving H-H, Pedersen O: Remission to normoalbuminuria during multifactorial treatment preserves kidney function in patients with type 2 diabetes and microalbuminuria. *NDT* 2004; 19: 28784-2788
- 13) Lajer M, Tarnow L, Fleckner J, Hansen BV, Edwards DG, Parving H-H, Boel E: Association of aldose reductase gene Z+2 polymorphism with reduced susceptibility to diabetic nephropathy in Caucasian type 1 diabetic patients. *Diabetic Medicine* 2004; 21: 867-873
- 14) Hansen TK, Tarnow L, Thiel S, Steffensen R, Stehouwer CDA, Schalkwijk CG, Parving H-H, Flyvbjerg A: Association between mannose-binding lectin and vascular complications in type 1 diabetes. *Diabetes* 2004, 53: 1570-1576
- 15) Rossing K, Christensen PK, Hovind P, Tarnow L, Rossing P, Parving H-H: Progression of nephropathy in type 2 diabetic patients. *Kidney International* 2004; 60:1596-1605
- 16) Schjoedt KJ, Andersen S, Rossing P, Tarnow L, Parving H-H: Aldosterone escape during blockade of the rennin-angiotensin system in diabetic nephropathy is associated with enhanced decline in glomerular filtration rate. *Diabetologia* 2004; 47: 1936-1939
- 17) Tarnow L, Hildebrandt P, Hansen BV, Borch-Johnsen K, Parving H-H: Plasma N-terminal pro brain natriuretic peptide as an independent predictor of mortality in diabetic nephropathy. *Diabetologia* 2005; 48: 149-155
- 18) Hovind P, Tarnow L, Rossing P, Jensen BR, Graae M, Torp I, Binder C, Parving H-H: Risikofaktorer for udvikling af mikro- og makroalbuminuri ved type 1 diabetes: et incidens kohorte studie. *Ugeskrift for læger* 2005; 167:57-60
- 19) Hovind P, Hansen TK, Tarnow L, Thiel S, Steffensen R, Flyvbjerg A, Parving H-H: Mannose-binding lectin as a predictor of microalbuminuria in type 1 diabetes. *Diabetes* 2005; 54:1523-1527
- 20) Andersen S, van Nieuwenhoven FA, Tarnow L, Rossing P, Rossing K, Wieten L, Goldschmeding R, Parving H-H: Reduction in urinary connective tissue growth factor by losartan in type 1 diabetic patients with diabetic nephropathy. *Kidney International* 2005, 67: 2325-2329
- 21) Tarnow L, Astrup AS, Parving H-H: Elevated placental growth factor (PlGF) predicts cardiovascular morbidity and mortality in type 1 diabetic patients with diabetic nephropathy. *Scandinavian Journal of Clinical and Laboratory Investigations* 2005, 65 (suppl 240):73-79
- 22) Skovbjerg H, Tarnow L, Locht H, Parving H-H: The prevalence of coeliac disease in adult Danish patients with type 1 diabetes with and without diabetic nephropathy. *Diabetologia* 2005; 48:1416-1417
- 23) Astrup AS, Tarnow L, Rossing P, Pietraszek L, Riis Hansen P, Parving H-H: Improved prognosis in type 1 diabetic patients with nephropathy: A prospective follow-up study *Kidney International* 2005; 68: 1250-1257
- 24) Frystyk J, Tarnow L, Krarup Hansen T, Parving H-H, Flyvbjerg A: Increased serum adiponectin levels in type 1 diabetic patients with microvascular complications. *Diabetologia* 2005; 48: 1911-1918
- 25) Schön S, Prante C, Müller S, Schötter H, Tarnow L, Kuhn J, Kleesiek K, Götting C: Impact of polymorphisms in the genes encoding xylosyltransferase I and a homologue in type 1 diabetic patients with and without nephropathy *Kidney International* 2005; 68: 1483-1490
- 26) Schjoedt KJ, Rossing K, Juhl TR, Boomsma F, Rossing P, Tarnow L, Parving H-H: Beneficial effect of spironolactone in diabetic nephropathy *Kidney International* 2005; 68:2829-2836

- 27) Astrrup AS, Tarnow L, Rossing P, Hansen BV, Hilsted J, Parving H-H: Cardiac autonomic neuropathy predicts cardiovascular morbidity and mortality in type 1 diabetic patients with diabetic nephropathy. *Diabetes Care* 2006; 29: 334-339
- 28) Rasmussen LM, Tarnow L, Hansen TK, Parving H-H, Flyvbjerg: Plasma osteoprotegerin levels are associated with glycaemic status, systolic blood pressure, kidney function and cardiovascular morbidity in type 1 diabetic patients. *European Journal of Endocrinology* 2006; 154: 75-81
- 29) Nguyen TQ, Tarnow L, Andersen S, Hovind P, Parving H-H, Goldschmeding R, van Nieuwenhoven FA: Urinary connective tissue growth factor excretion correlates with clinical markers of renal disease in a large population of type 1 diabetic patients with diabetic nephropathy. *Diabetes Care* 2006; 29: 83-88
- 30) Jacobsen PK, Tarnow L, Parving H-H: Time to consider ACE insertion/deletion genotypes and individual renoprotective treatment in diabetic nephropathy *Kidney International* 2006; 69: 1293-95
- 31) Schjoedt KJ, Lajer M, Andersen S, Tarnow L, Rossing P, Parving H-H: Aldosterone synthase (CYP11B2) – 344 T/C polymorphism and renoprotective response to losartan treatment in diabetic nephropathy. *Scandinavian Journal of Clinical Investigations* 2006; 66: 173-180
- 32) Lajer M, Schjoedt KJ, Jacobsen PK, Tarnow L; Parving H-H: Aldosterone synthase (CYP11B2) – 344 T/C polymorphism is not associated with the initiation and progression of diabetic nephropathy in Caucasian Type 1 diabetic patients. *Diabetic Medicine* 2006; 23: 673-680