Endothelin-1 (ET-1) is a major transcriptional activator of renal proximal tubule cells acting in an autocrine and paracrine manner and has been implicated in progressive renal interstitial fibrosis by promoting gene expression, via different signal pathway.

Therefore, our research effort has focussed on the role of ET-1 in progressive renal diseases and renal tumors. This resulted in the description of a normal signalling pathway via the ETA-receptor and a cytoplasmic transcription complex consisting NF-kB p65, MAPK p38 and PKCα migrating into the nucleus, which has been analysed in normal and tumoral proximal tubular cells and renal tumors (see figure below).

Our group is especially interested in the involvement of ET-1 in different kidney diseases predominantly triggered via the proximal tubular cells.

A further research interest focused on the ET-1 induced regulation of microRNAs (miRNAs) and their role in the development of kidney tumors and other kidney diseases. With respect to the miRNAs, we were able to detect a miRNA, called miRNA 15a, which is only upregulated in urine samples from patients with clear cell renal carcinoma and this upregulation disappears after tumor removal.

This resulted in recognition by the Walter Schulz Stiftungsspreis in 2012

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Awards

2011
1. Young Investigator Awards, Endothelin-1 Conference, Cambridge, UK, to Dr. M. von Brandenstein and MSc M. Schlosser
2. Award for best oral presentation, Endothelin-1 Conference Cambridge, UK, to Dr. M. von Brandenstein
3. Award for best poster presentation, Endothelin-1 Conference Cambridge, UK, to Dr. M. von Brandenstein

2012

1. Walter Schulz Forschungspreis to Dr. M. von Brandenstein

2013

1. Young Investigator Awards, Endothelin-1 Conference, Tokio, Japan, to Dr. H. Löser, BSc Julia Straube and Dr. M. von Brandenstein

Monica Schlosser, M. Sc.

Financial support

Prof. Dr. Joachim W.U. Fries

1. Marga und Walter Boll Stiftung,
2. Private donations,
3. Köln Fortune,
4. Imhoff-Stiftung

Dr. Heike Löser

1. Köln Fortune

Dr. rer. medic. Melanie Freifrau von Brandenstein

1. Köln Fortune,
2. 2nd Professorinnenprogramm der Universität zu Köln,
3. Wiedereinstiegsprogramm der Universität zu Köln, Exzellent Research Support Programm
1. Wiedereinstiegsprogramm der Universität zu Köln, Exzellent Research Support Programm

Publications


M von Brandenstein, R Depping, H-P Dienes, J W U Fries, Endothelin-1 induced Protein kinase C α regulates nuclear pri-microRNA 15a release, Biochim Biophys Acta. 2011 Oct;1813(10):1793-802.


H Loeser, M von Brandenstein, A Herschung, M Schlosser, Buettner R, JWU Fries Endothelin-1 influences Multiple Drug Resistance in the human renal proximal tubule via microRNA 133a downregulating the MRP2 transporter, Life Scinces, under review

Es besteht eine enge Kooperation mit der Nephrologischen Forschungsgruppe Prof. Benzing et al.

Klinik II für Innere Medizin - Nephrologie, Rheumatologie, Diabetologie und Allgemeine Innere Medizin