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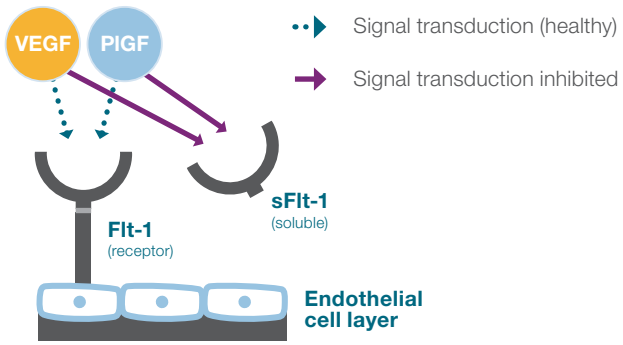
KEY FACTS

Biomarkers for pre-eclampsia management > week 20

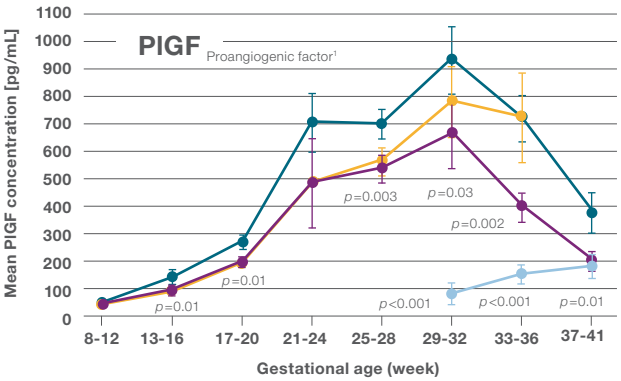
The role of angiogenic factors in pre-eclampsia

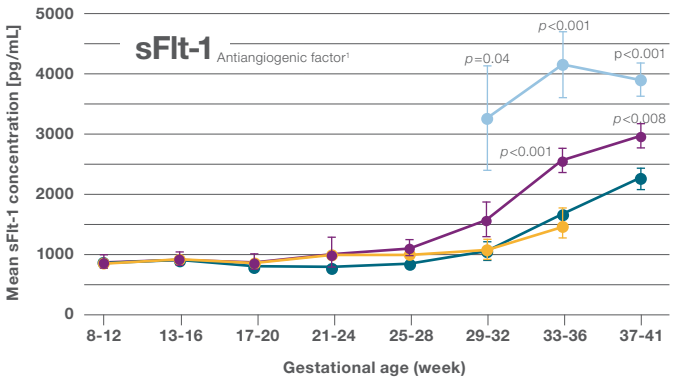
Although the cause of pre-eclampsia remains unclear, an imbalance of the angiogenic factors Placental Growth Factor (PlGF) and soluble FMS-like Tyrosine Kinase (sFlt-1) seems to induce endothelium dysfunction and therefore may initiate the disease.



Measuring PlGF and sFlt-1 in pregnancy

As separation of curves of healthy vs pre-eclamptic pregnancy is already showing from week 8, PlGF is a perfect biomarker for first trimester pre-eclampsia screening as well as pre-eclampsia diagnosis >20 weeks. Differences in sFlt-1 levels are starting to show after week 20, which makes sFlt-1 the perfect partner for PlGF in the diagnosis of pre-eclampsia > week 20.





Control — Women who had pre-eclampsia >5 weeks later — Women who later had pre-eclampsia — Women with clinical pre-eclampsia

PlGF belongs to the Vascular Endothelial Growth Factors (VEGF) family, promoting proliferation and survival of endothelial cells.[1]

sFlt-1 is a truncated form of the VEGF receptor Flt-1 and binds VEGF and PlGF with high affinity, therefore neutralizing their effects.[2]

Thermo Scientific™ B·R·A·H·M·S™ PlGF plus KRYPTOR™ is an automated immunofluorescent assay for the quantitative determination of PlGF-1 in human serum and EDTA plasma.

- FAS: 6.7 pg/mL
- Onboard stability: 29 days
- Short incubation time: 29 minutes

Thermo Scientific™ B·R·A·H·M·S™ sFlt-1 KRYPTOR™ is an automated immunofluorescent assay for the quantitative determination of sFlt-1 in human serum and EDTA plasma.

- FAS: 29 pg/mL
- Onboard stability: 29 days
- Short incubation time: 9 minutes

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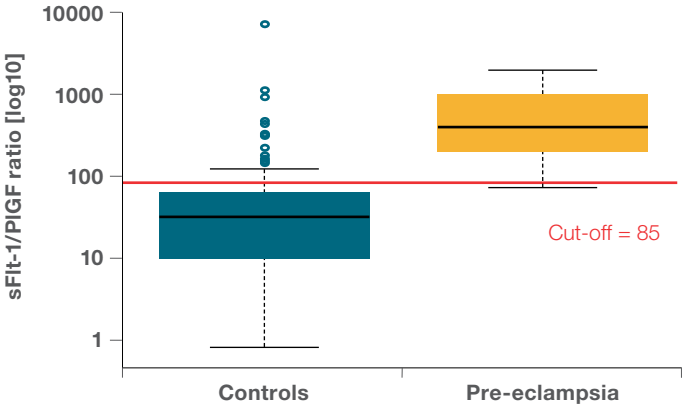
Improved pre-eclampsia diagnosis and short-term prognosis

10% of pregnant women show signs and symptoms of pre-eclampsia. Only **one fifth of them** are actually developing pre-eclampsia.[3] Assessment of blood pressure and proteinuria offers only a **poor sensitivity and specificity** in predicting pre-eclampisa.[4, 5] This diagnostic standard is significantly improved by sFlt-1 and PlGF serum measurement.

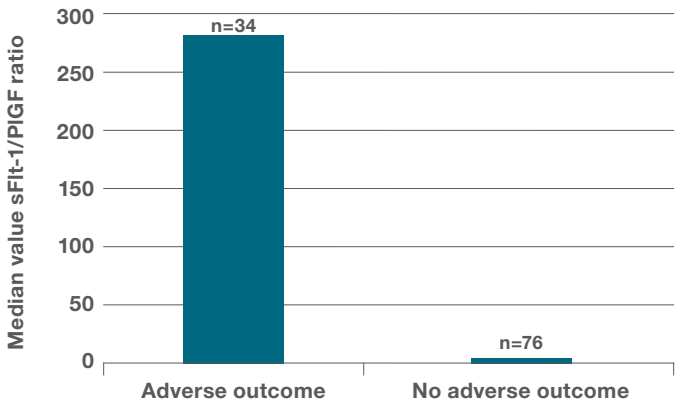
Improved pre-eclampsia diagnosis with sFlt-1/PlGF ratio

Women with hypertension due to pre-eclampsia have a significantly higher sFlt-1/PlGF ratio than women with any other form of hypertensive disorder.



Short-term prognosis with sFlt-1/PlGF ratio in pre-eclamptic women

Women with any subsequent adverse outcome due to pre-eclampsia have a significantly higher sFlt-1/PlGF ratio than women with no complications.[6,9]



Benefits of the sFlt-1/PlGF ratio in diagnosing pre-eclampsia

- Significantly higher sensitivity and specificity in diagnosing pre-eclampsia than measuring blood pressure and proteinuria [7]
- Clearly differentiating between pre-eclampsia and other forms of hypertensive disorders [8]

Benefits of the sFlt-1/PlGF ratio as a predictor for adverse outcome

- Improved preparation time for delivery if needed [6,9]
- Improved outbalancing of maternal risk vs fetal prematurity [6,9]

References **1.** Levine et al. N Engl J Med 2004; 350: 672-83 **2.** Hagmann et al. Clin Chem 2012; 58(5), 837-45 **3.** Milne et al. BMJ 2009; 339: b3129 **4.** Verlohren et al.Clin Sci 2012; 122(2): 43-52 **5.** Zhang et al. Obstet Gyneol 2001; 97: 261-7 **6.** Rana et al. Circulation 2012; 125 (7): 911-9 **7.** Hagmann et al. Clin Chem 2012; 58(5): 837-45 **8.** Verlohren et al. Am J Obstet Gynecol 2010; 202: 161.e1-11 **9.** Salahuddin et al. Hypert Pregn 2016; 35(3): 330-45

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