

# Case report of a girl with secondary amenorrhea associated with aurantiasis cutis



Ralph Decker<sup>1,2</sup>, Jens Jacobeit<sup>1</sup>

<sup>1</sup> MVZ Praxis im Chilehaus, Pediatric Endocrinology, Andrology, Internal Medicine & Sexual Medicine, Hamburg, Germany

<sup>2</sup> Göteborg Pediatric Growth Research Center, Department of Pediatrics, The Sahlgrenska Academy at University of Gothenburg, Institute of Clinical Sciences, Gothenburg, Sweden

## Conclusion

Secondary normo-gonadotropic amenorrhea can be associated with hypercarotenemia.

## Background

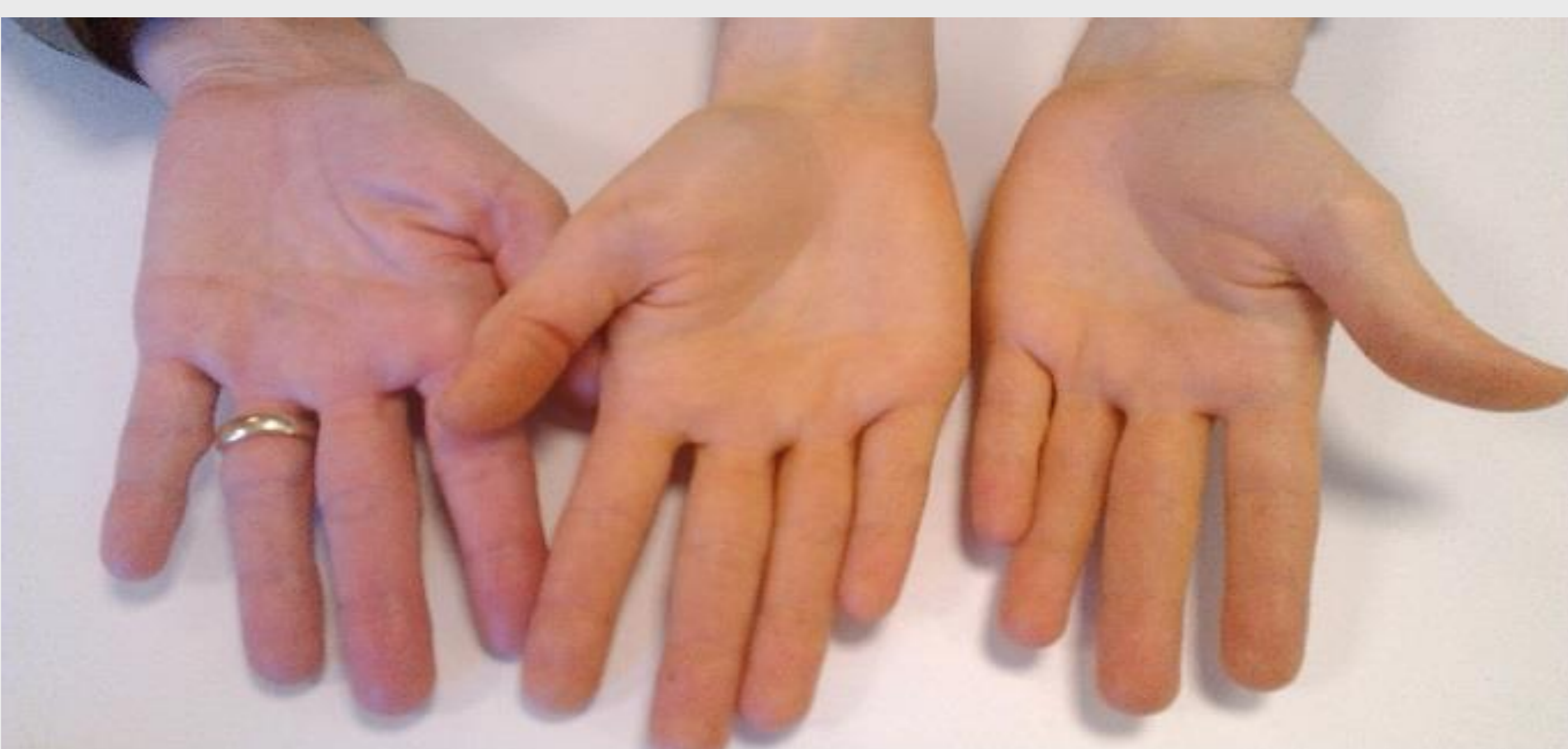
Aurantiasis cutis is a condition of yellowish or golden skin discoloration that can result from eating excessive amounts of foods containing carotene leading to hypercarotenemia<sup>(1)</sup>, described causing secondary amenorrhea<sup>(2)</sup>.

## Objective & hypothesis

Hypercarotenemia can cause secondary amenorrhea without overconsumption of excessive quantities of carotene.

## Material/ Methods

A 16-year-old girl presented to our endocrine outpatient clinic with a 2-year history of varying yellow discoloration of her skin (**Figure 1**) and secondary amenorrhea. The findings of the general physical examination were normal, but there was a marked yellow discoloration of the palms, soles, and nasolabial folds. A dietary history revealed a low carotene diet, but also a low carbohydrate diet. BMI was 19.9 kg/m<sup>2</sup> (-0.2 SDS) without signs of anorexia.

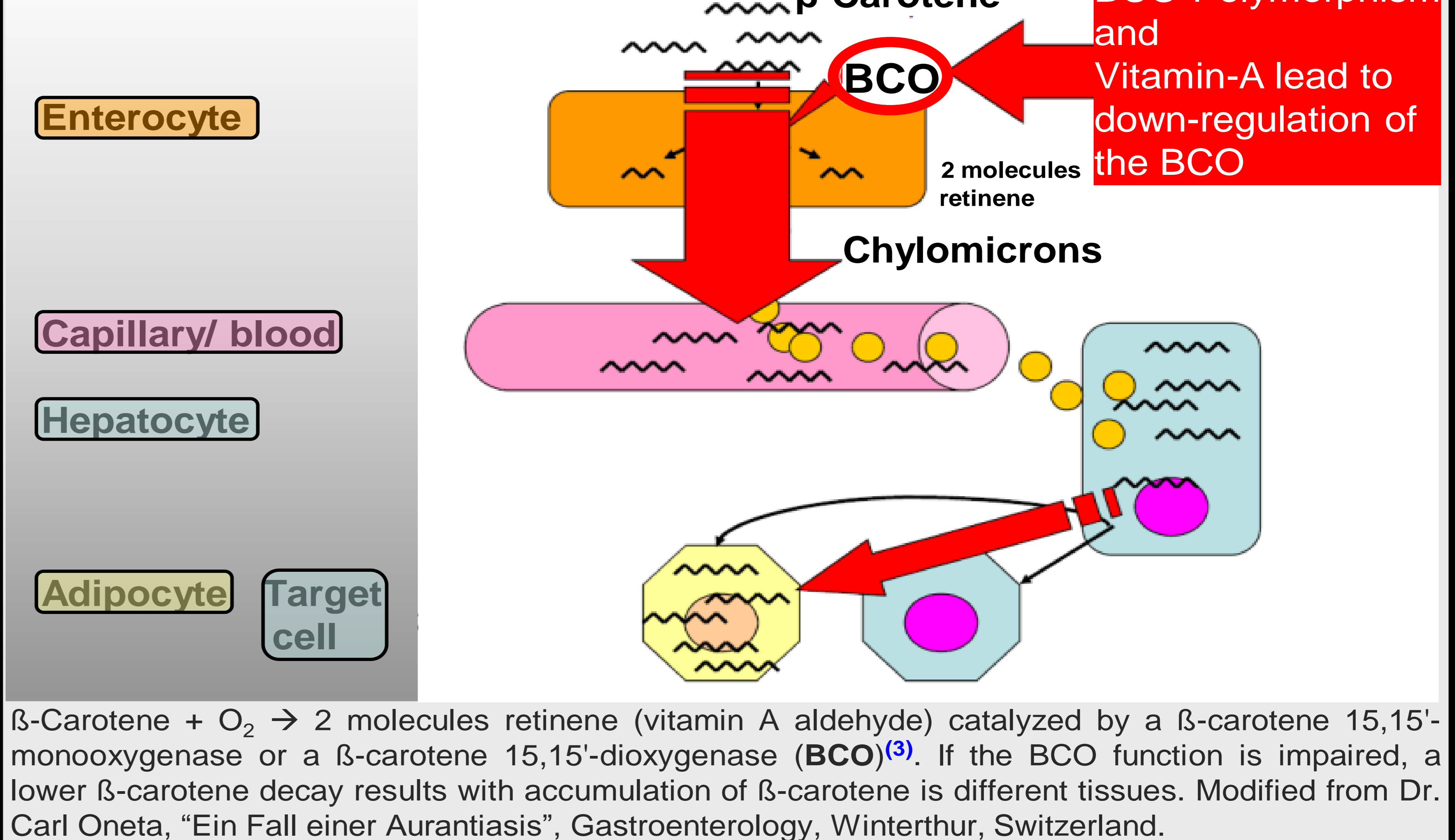


**Figure 1**  
Palms of our patient (right) showing a yellowish skin discoloration. For comparison the palm of the mother is shown to the left.

## References

1. Tanikawa K, Seta K, Machii A, Itoh S 1961 [Aurantiasis cutis due to overeating of dried laver (nori): a case report]. Jpn J Med Sci Biol 50:414-419
2. Kemmann E, Pasquale SA, Skaf R 1983 Amenorrhea associated with carotenemia. JAMA 249:926-929
3. Lindqvist A, Andersson S 2002 Biochemical properties of purified recombinant human beta-carotene 15,15'-monooxygenase. J Biol Chem 277:23942-23948

**Figure 2**



## Results

Laboratory tests (**Table 1**) showed a  $\beta$ -Carotene level more than the 2-fold above the upper reference level. Hyperbilirubinemia was excluded. Hypogonadotropic hypogonadism was not present. There was no evidence for hyperandrogenism or adrenal dysfunction. Liver function tests were normal.

Table 1	Unit	Reference range
$\beta$ -Carotene	2230 $\mu$ g/l	(235-1040)
Bilirubin (total)	0.4 mg/dl	(0.2-1.0)
LH	4.2 IU/l	(1.0-52.2)
FSH	7.0 IU/l	(2.2-10.1)
Estradiol-17 $\beta$	49.4 ng/l	(16.1-238,3)
Progesterone	0.41 $\mu$ g/l	(0-12.4)
Prolaktin	6.6 $\mu$ g/l	(4,2 - 25)
17-OH-Progesterone	0.73 $\mu$ g/l	(0.1-2.2)
Testosterone	0.41 $\mu$ g/l	(0.1-0.4)
DHEAS	6.47 $\mu$ g/l	(2.2 - 8.1)

## Discussion

In this girl we observed hypercarotenemia associated with secondary normo-gonadotropic amenorrhea in absence of excess external intake of carotenes. A hypothalamic GnRH dysfunction<sup>(4)</sup> with desynchronized GnRH pulsatility due to a BCO-polymorphism<sup>(5)</sup> can be suggested. Genotype-phenotype association studies are needed to assess the impact of BCO-polymorphisms on amenorrhea.

correspondence to:  
kontakt@praxis-chilehaus.de

Disclosure statement: RD - Research supported by MVZ Limbach Hamburg GmbH, JJ - nothing to declare

