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SIAB receives support from WADA, USADA, Australian Government & Anti Doping Danmark.

Blood testing: pushing the envelope

A decade of advances, and false dawns...

1998

- “We need more funding”
- “We need a common set of rules, banned lists & penalties”
- “We need Government & law enforcement”

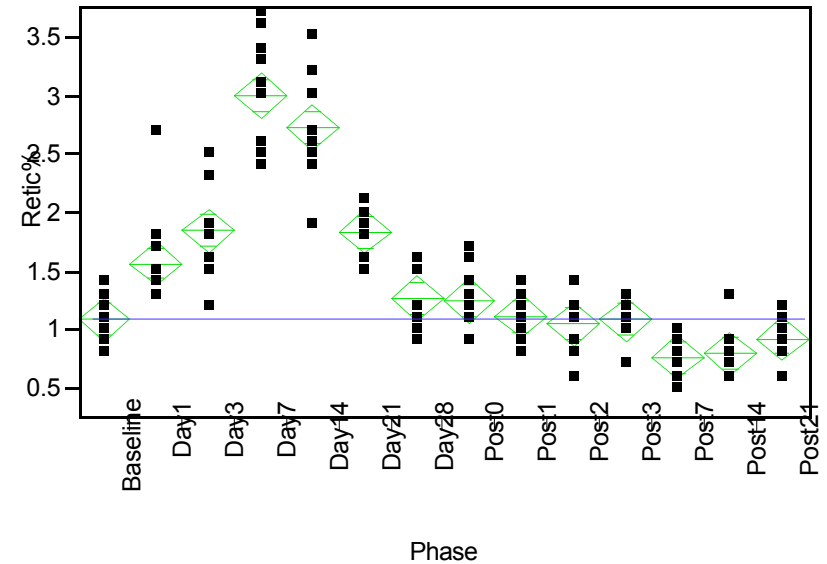
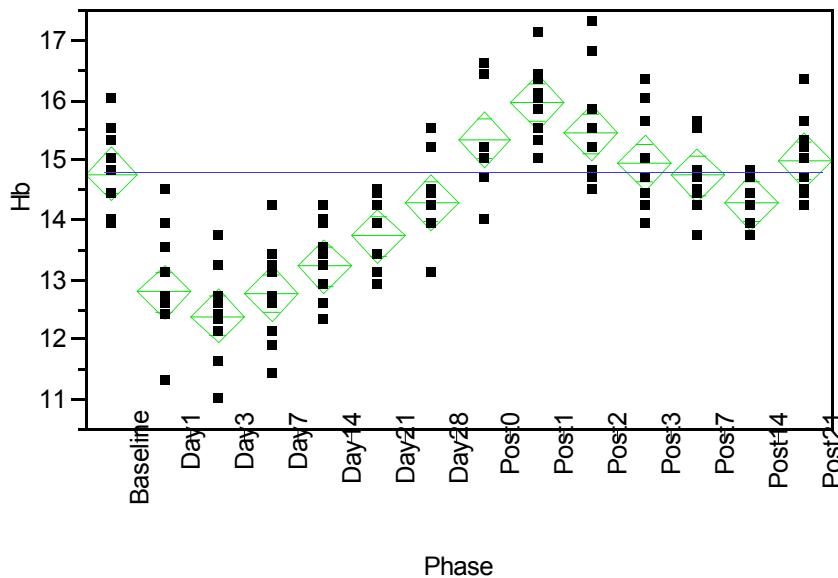
2008

- Adequate funding
- WADA Code
- BALCO (steroids)
Puerto (transfusion)
Torino (transfusion)

History of autologous transfusion

- 'Discovery'
 - in 1972 studies show athletic performance improved by ~20%
- 12 years later
 - US cycling team use transfusions to win multiple medals at 1984 Los Angeles Olympics
- 34 years later
 - Puerto documents reveal widespread use of autologous transfusion

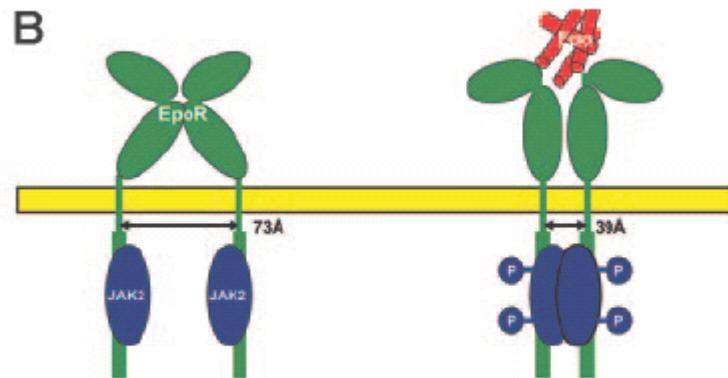
Changes in blood parameters after autologous transfusion



Phlebotomy of 1.3L whole blood (~20% of total volume)
Reinfusion of 0.8 L of packed RBC
see Damsgaard et al. Haematologica, 91(5):141-142, 2006.

EPO

‘Conformational change in receptor stimulates EPO production’



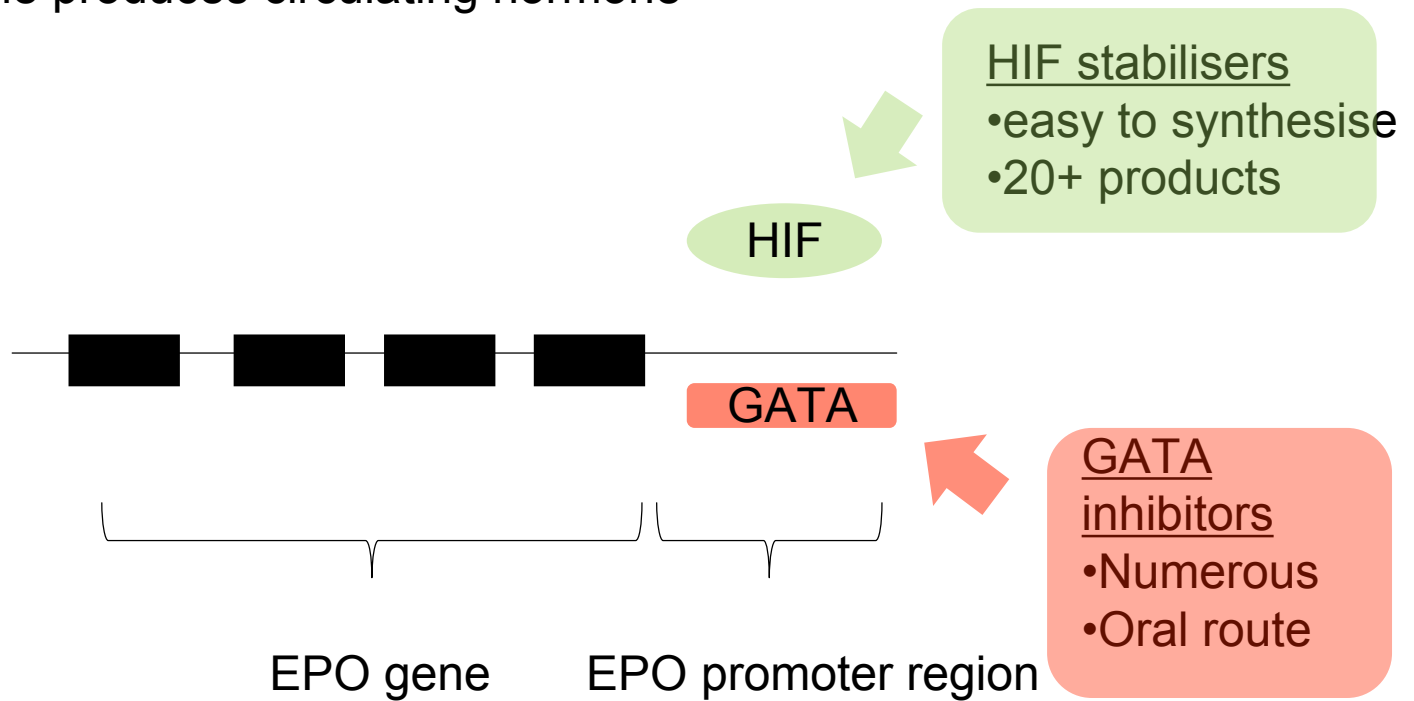
Some examples:

- CERA
- SEP
- EPO fusion proteins
- EPO-GM-CSF
- Fc-EPO
- CTNO 528
- Hematide

From Bunn (2007). Blood 109 (3) p868-8

EPO

'EPO gene produces circulating hormone'



see Bunn (2007). Blood 109 (3) p868-873

What of blood testing in the future?

- Markers that provide indirect evidence of doping
- The landscape for blood testing will be radically different...or apocalyptic???

Paradigm overhaul

1. Ban team-based medical staff
2. Introduce 'NOLO' (GPS-based 'NOtification & LOcation')
3. Review burden of proof

Conclusion

“Those who ignore history
are condemned to repeat it”