Donor haemoglobin and iron

Update on KIND, Donor InSight and FIND'EM studies

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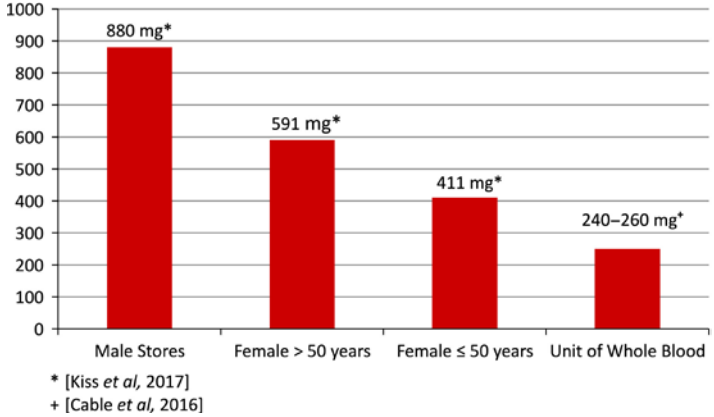
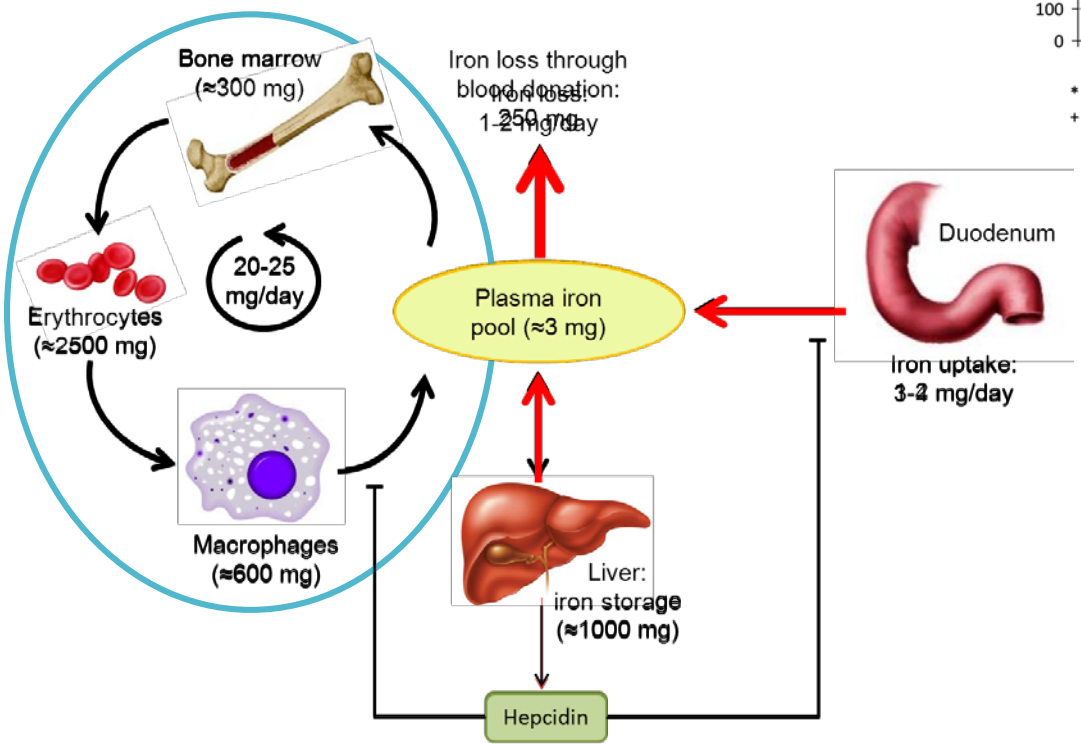
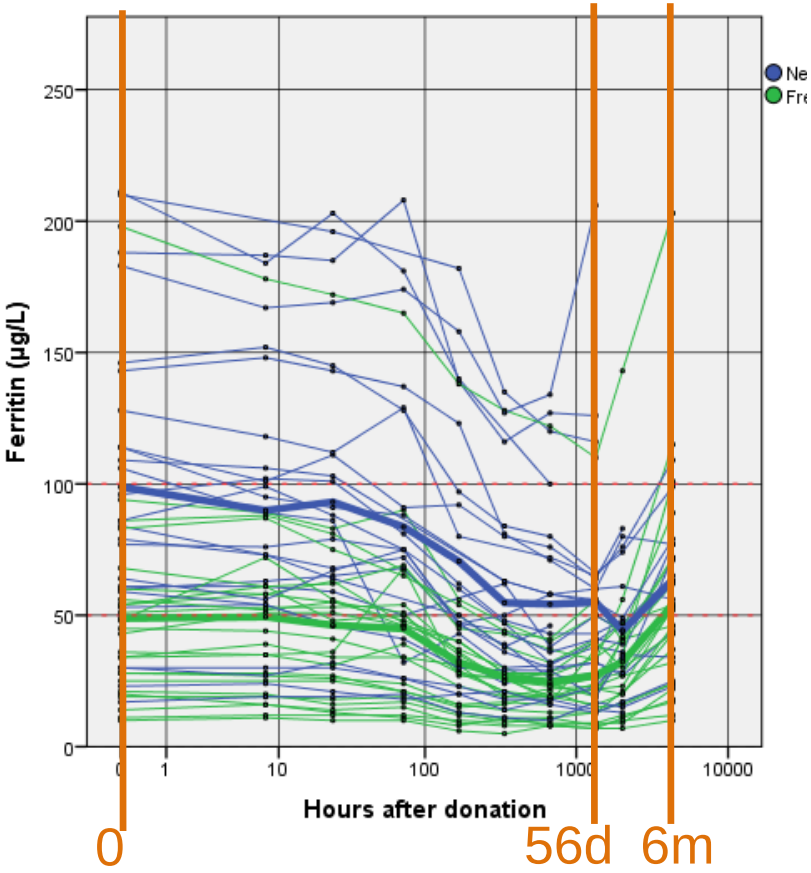
Iron homeostasis





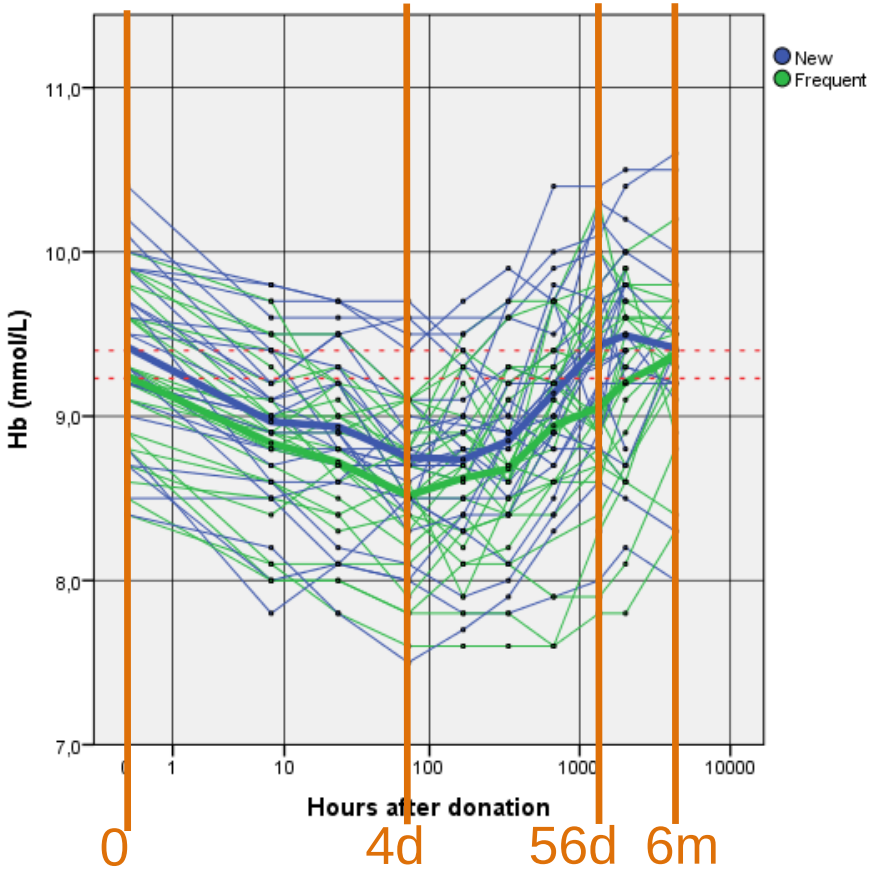
Kinetics of IroN after Donation (KIND)

Ferritin



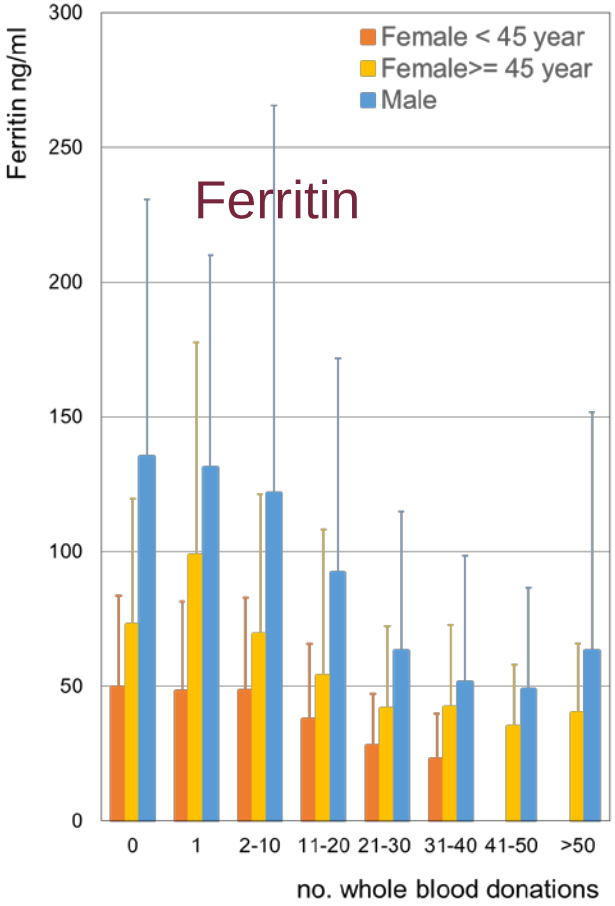
Hemoglobin

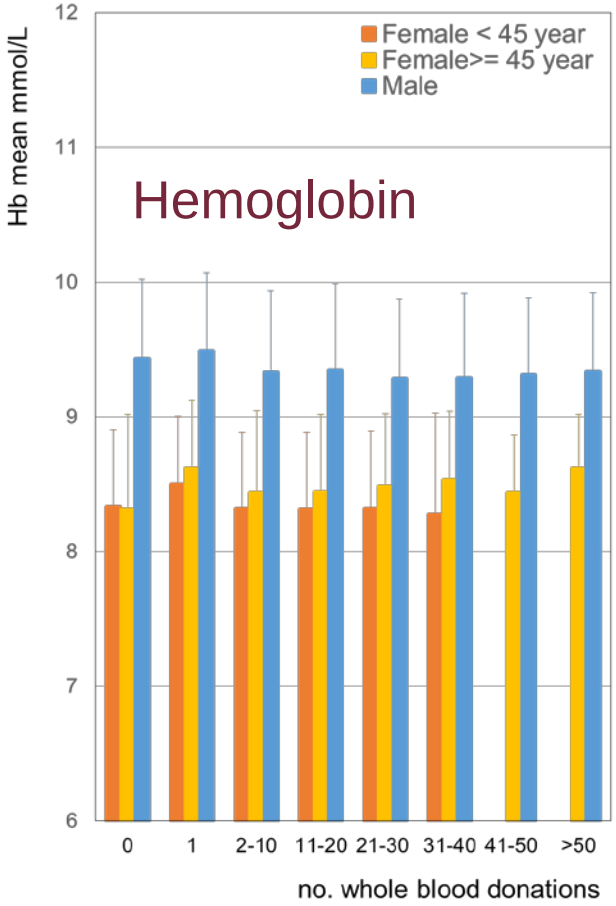
Schotten et al., Blood 2016



Correlation with number of donations

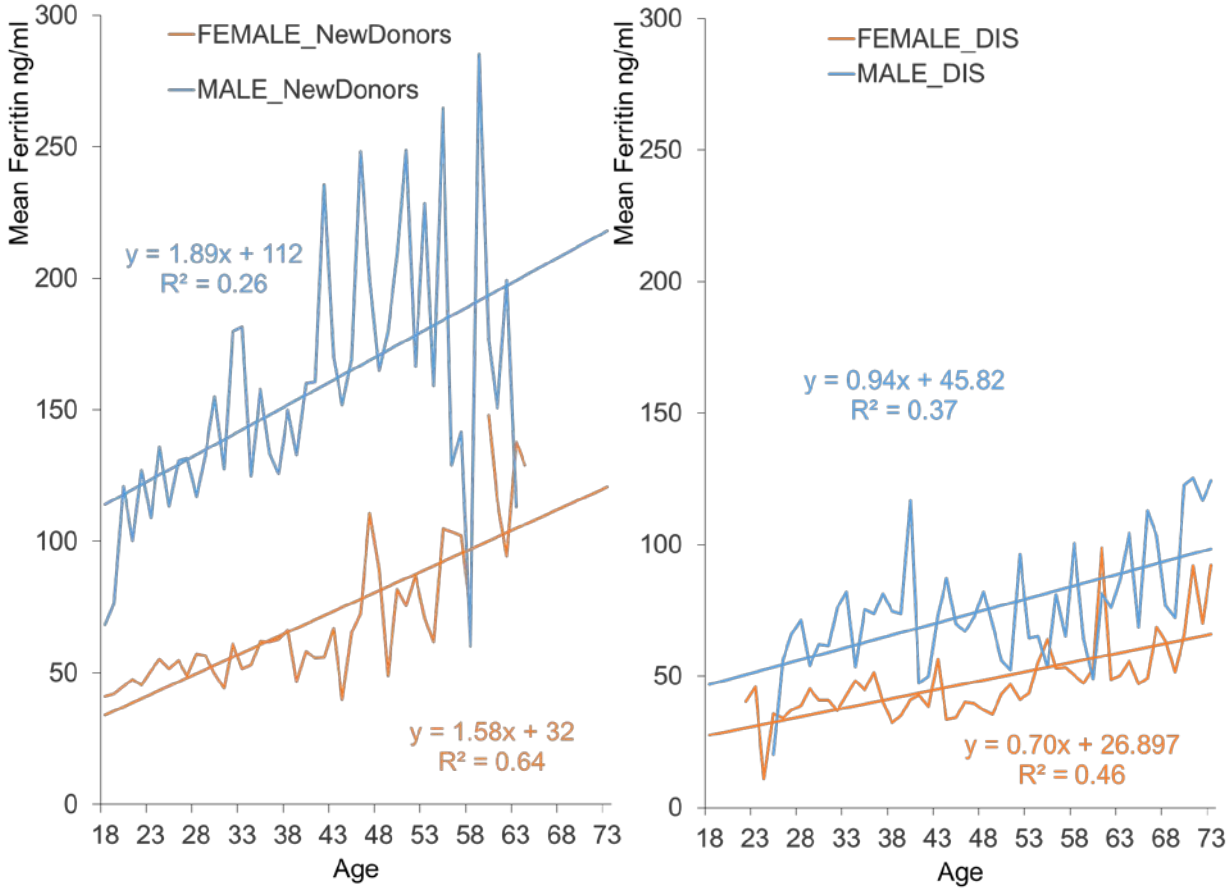
Cross-sectional data **Donor InSight-III**





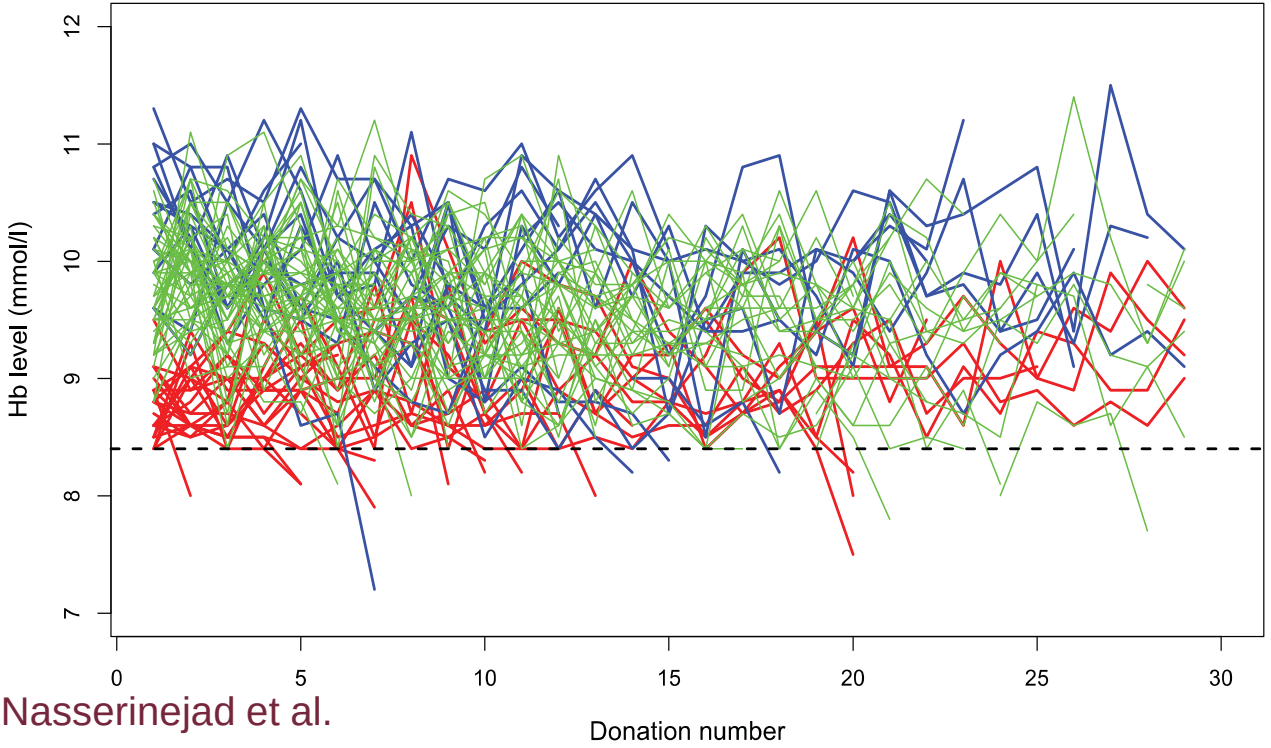
Ferritin and age of donors

Cross-sectional data **Donor InSight-III**



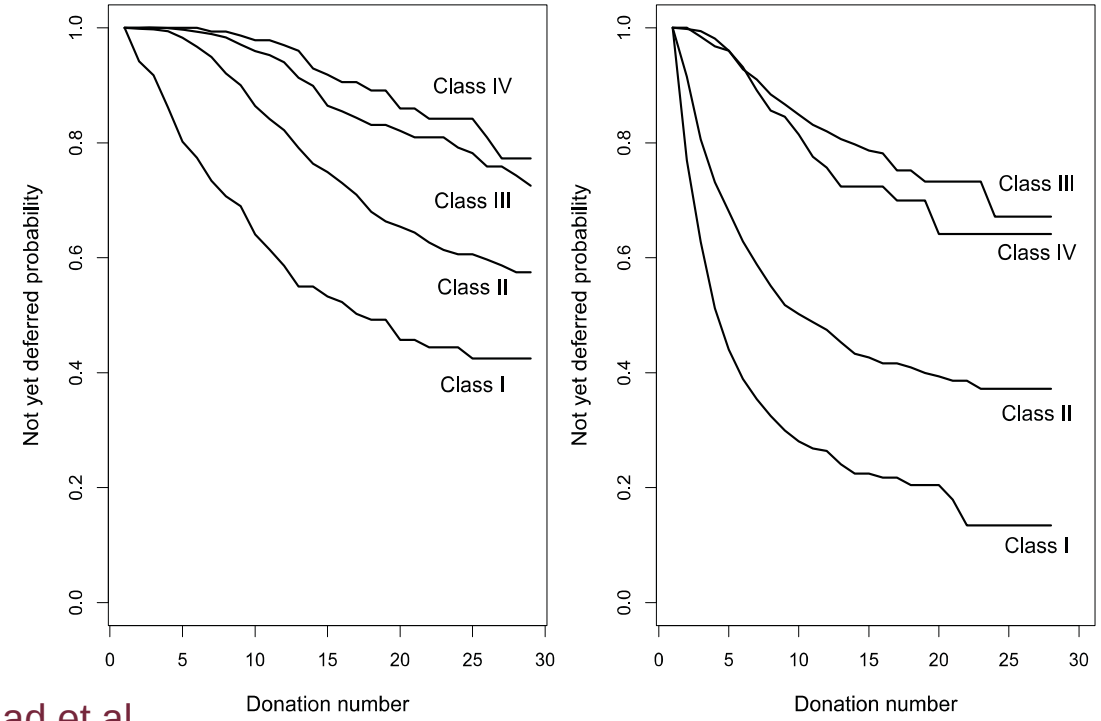
Male Hb profiles (three groups)

Latent class growth analyses



K. Nasserinejad et al.

Donors deferred proportion Kaplan-Meier curves of the latent classes

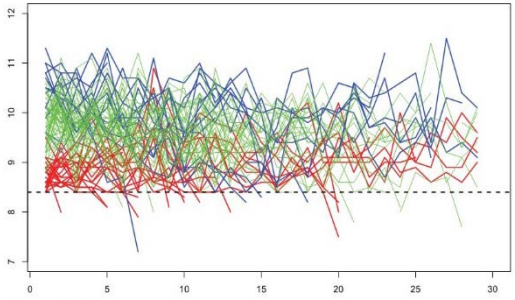


K. Nasserinejad et al.

PhD project Tiffany Timmer

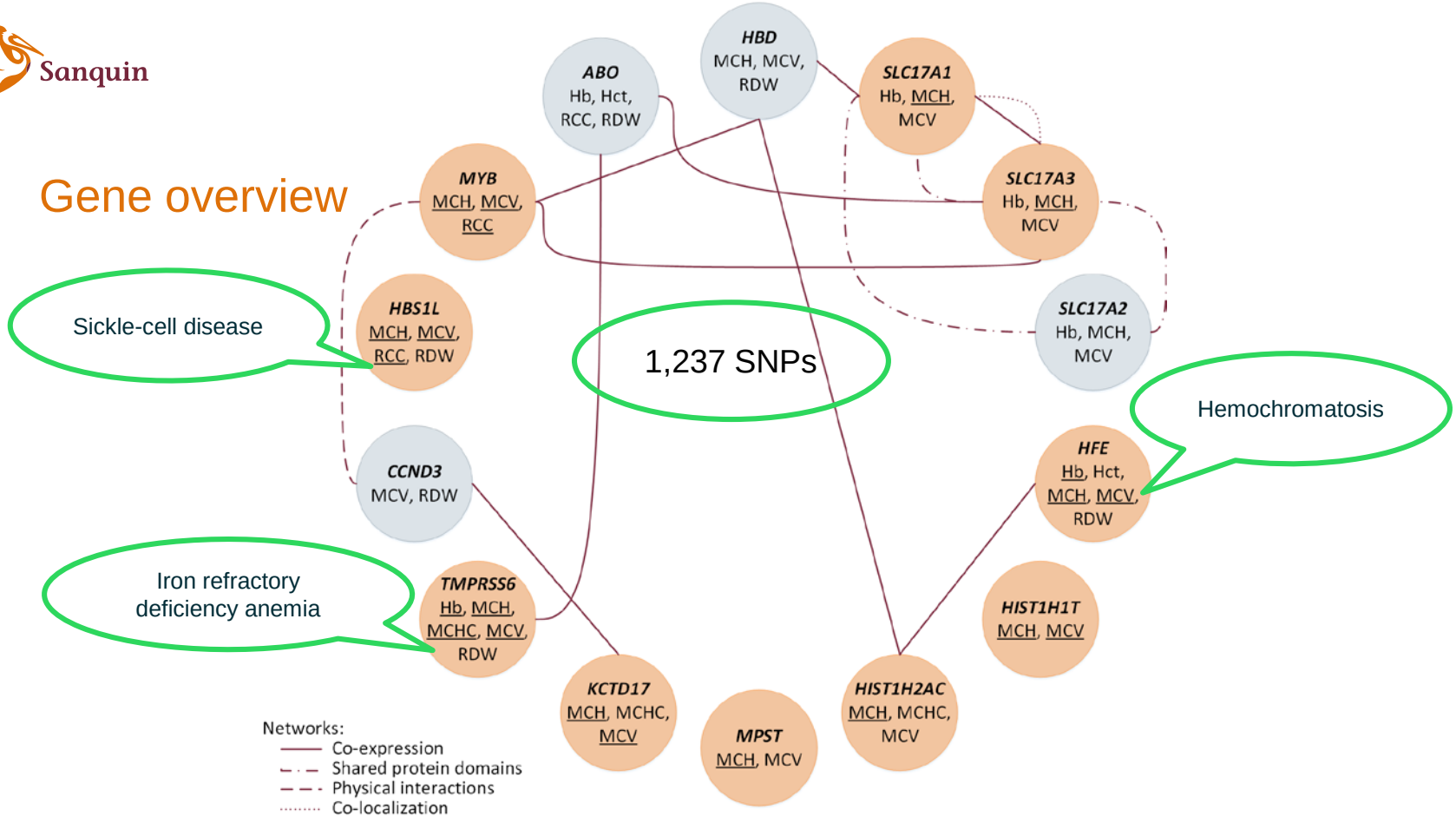
Donor InSight (DIS)-III

Aim: Identify genetic determinants of Hb trajectories



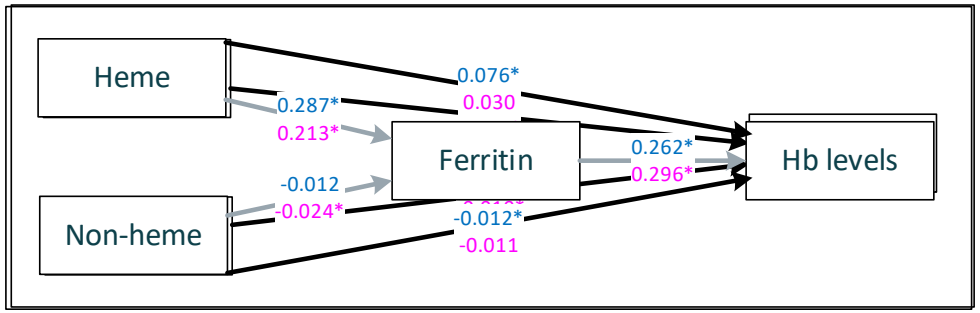
+ questionnaires: 3.000 donors

Gene overview

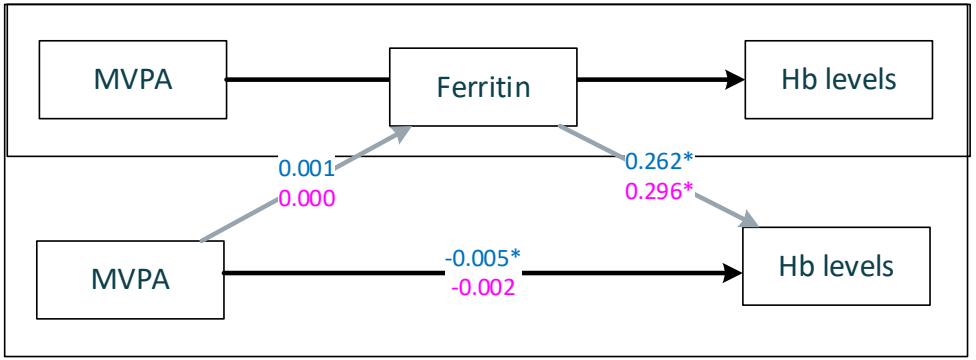


Timmer et al., Mutation Research - Reviews (2019)

Lifestyle behaviors and Hb



Males / Females



		Indirect effect
♂	**Heme**	**0.075 (0.048 to 0.110)**
	Non-heme	-0.003 (-0.008 to 0.001)
♀	**Heme**	**0.063 (0.030 to 0.099)**
	Non-heme	**-0.007 (-0.013 to -0.002)**

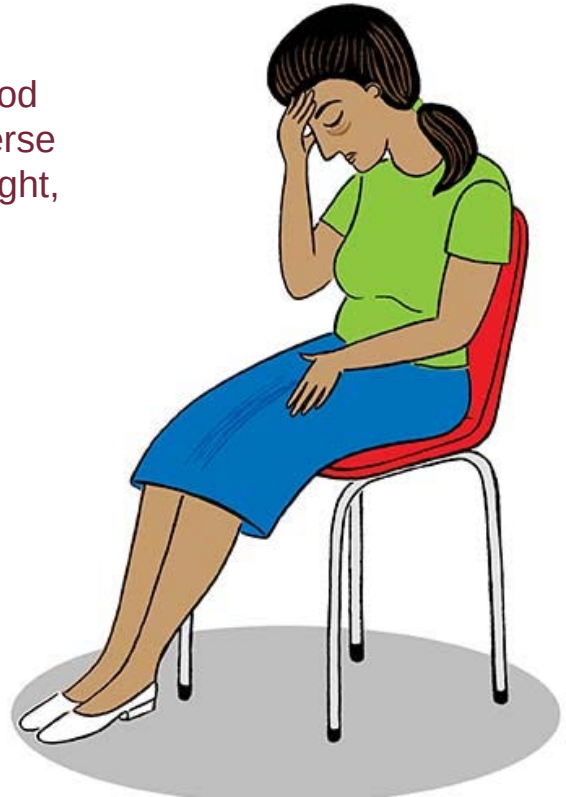
		Indirect effect
♂	MVPA	0.000 (-0.001 to 0.001)
♀	MVPA	0.000 (-0.001 to 0.001)

Iron deficiency-related symptoms

Fatigue, Cognitive dysfunction, Pica (craving and consumption of nonfood substances), Restless leg syndrome, Impaired exercise tolerance, Adverse pregnancy outcomes (perinatal mortality, preterm delivery, low birth weight, newborn cognitive abnormalities), Hearing loss

BUT

- Donors usually non-anaemic
- Symptoms in donors related to ferritin?



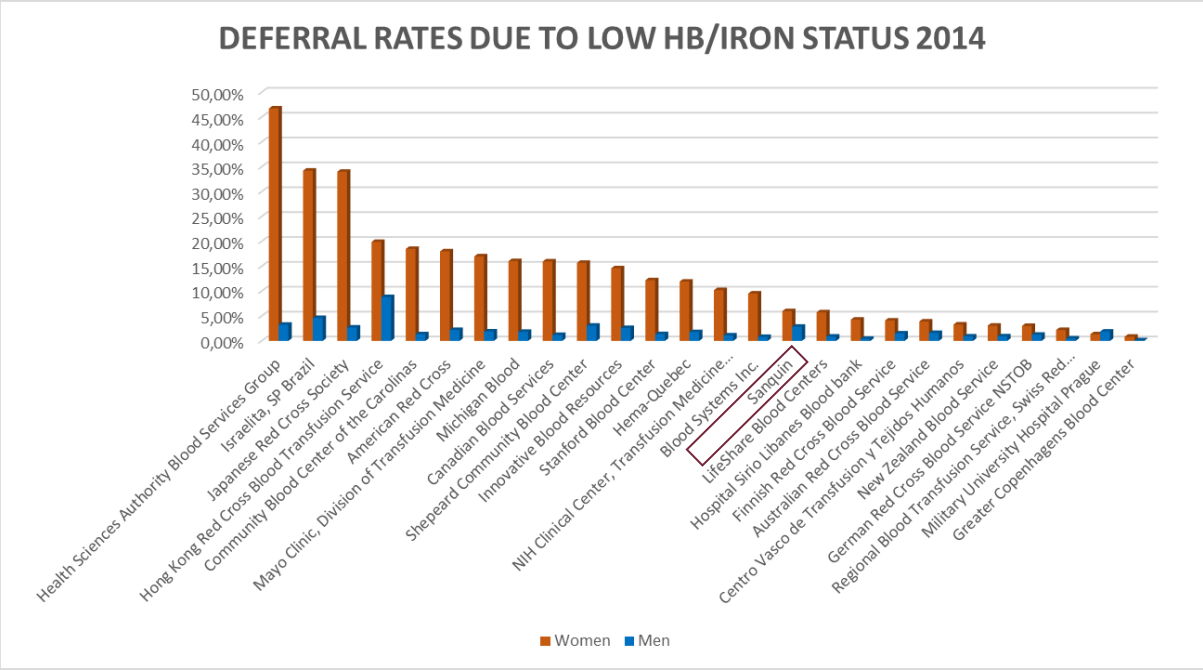
Sanquin donors – Hb deferrals in whole blood donors

Reasons for donor deferral:

- Travel
- Needle contact
- Sexual risk behaviour
- Disease/medication use/medical procedures

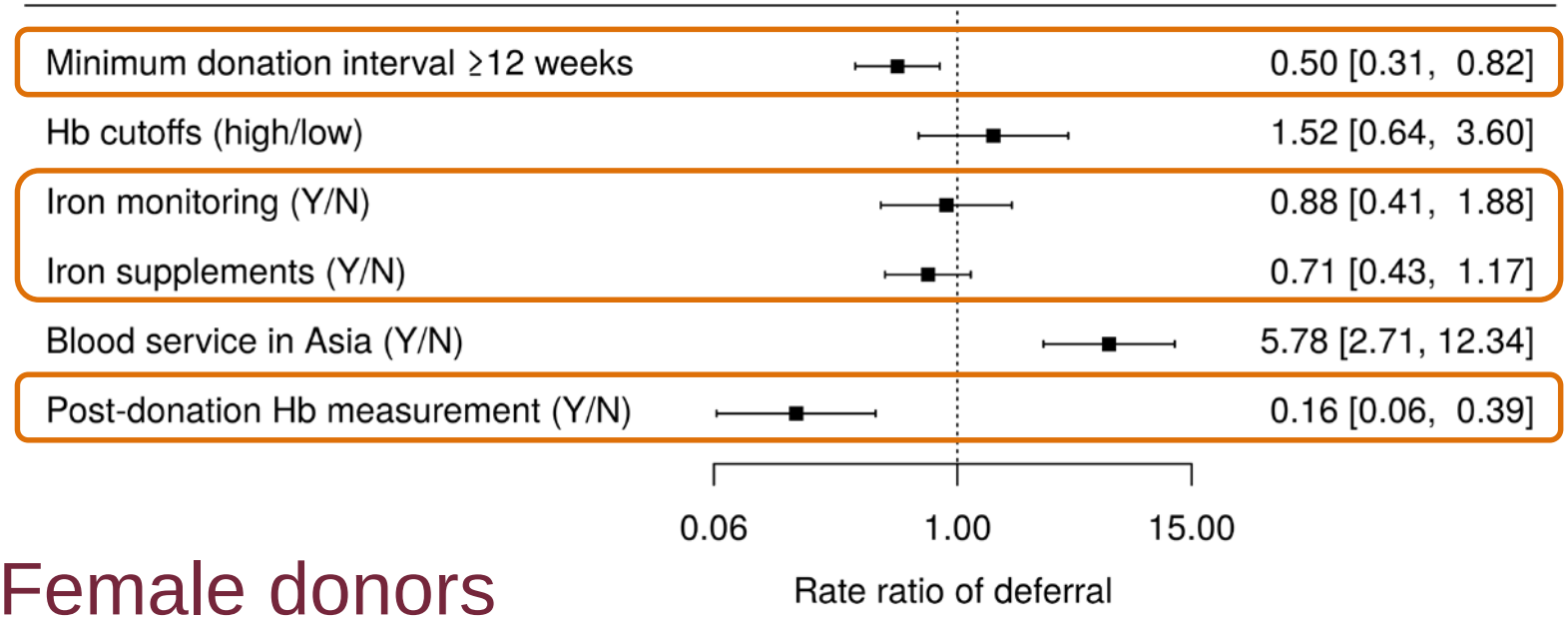
	Hb cutoff	Donations	Hb deferrals	%
Men	<8.4 mmol/L	228,428	8,046	3.5%
Women	<7.8 mmol/L	227,037	15,365	6.8%
			1/1/18 – 31/12/18	

International low Hb deferral rates



Ongoing BEST Collaborative project by E. Di Angelantonio and K. van den Hurk

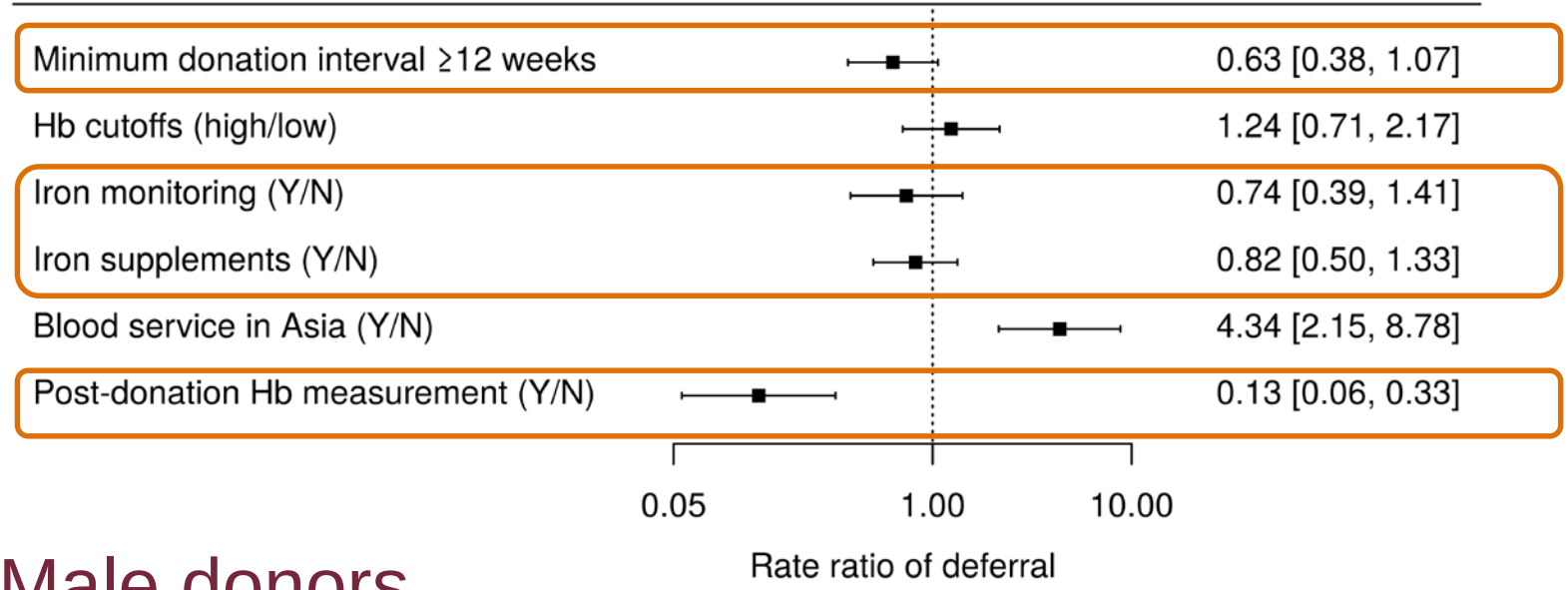
Prevention of low Hb (deferrals)?



Female donors

Ongoing BEST Collaborative project by K. van den Hurk and E. Di Angelantonio, et al.

Prevention of low Hb (deferrals)?



Male donors

Ongoing BEST Collaborative project by K. van den Hurk and E. Di Angelantonio, et al.


At predonation screening,
every 5th donation
≤15 ng/ml: 12 months
15-30 ng/ml: 6 months
Ferritine
No iron supplementation

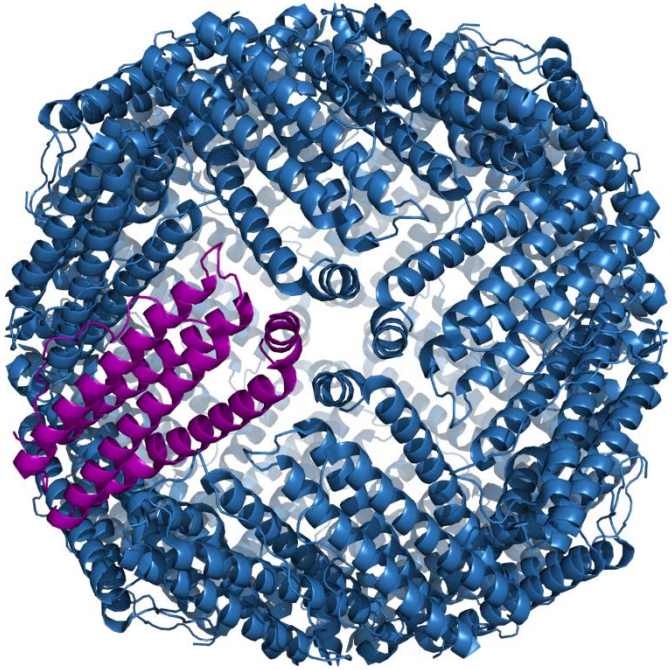
Hypothesized effects

Middle-long-term

- Increasing Hb and ferritin levels
- Decreasing deferral rates
- Improved donor health
- Improved donor availability
- Equal costs

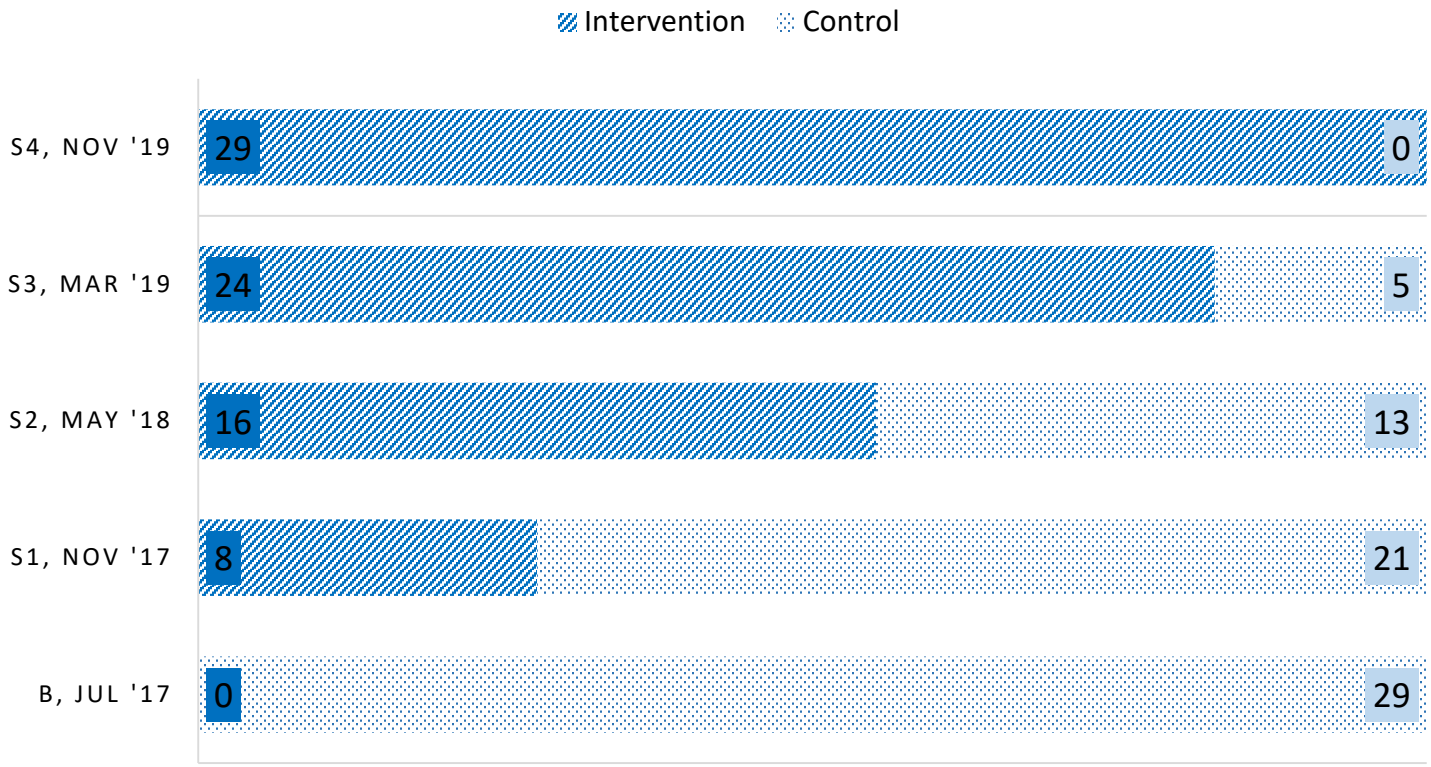
Long-term

- Personalized intervals
    - longitudinal Hb and ferritin measurements



FIND'EM stepped wedge cluster-randomized trial

Ferritin measurement IN Donors – Effectivity of iron Monitoring



Low-ferritin deferrals at Sanquin since Sep 2017

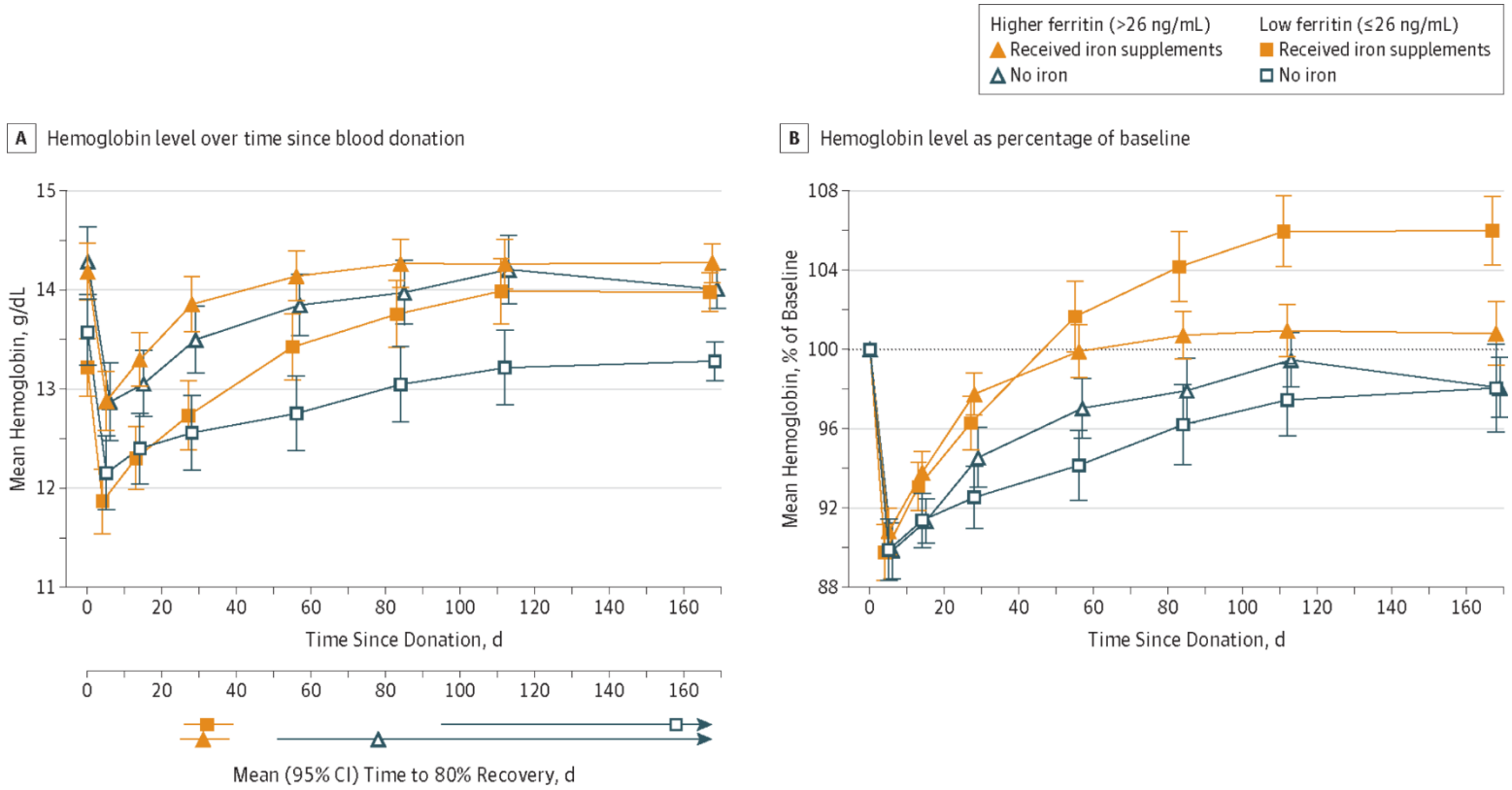
Ferritin cutoffs	New donors
<15	3.9%
15-30	13.2%
n	10,499
Total % deferred	

Ferritin levels were measured post-donation in donors not deferred

JAMA Network™

From: **Oral Iron Supplementation After Blood Donation - A Randomized Clinical Trial**

JAMA. 2015;313(6):575-583. doi:10.1001/jama.2015.119



To conclude

Iron depletion unwanted effect of (repeated) donations

Ferritin-guided donation intervals under study

Iron supplementation and genetic testing alternative options