

ANTIGENIC VARIATION IN PLASMODIUM FALCIPARUM PARASITES INFECTING PREGNANT WOMEN

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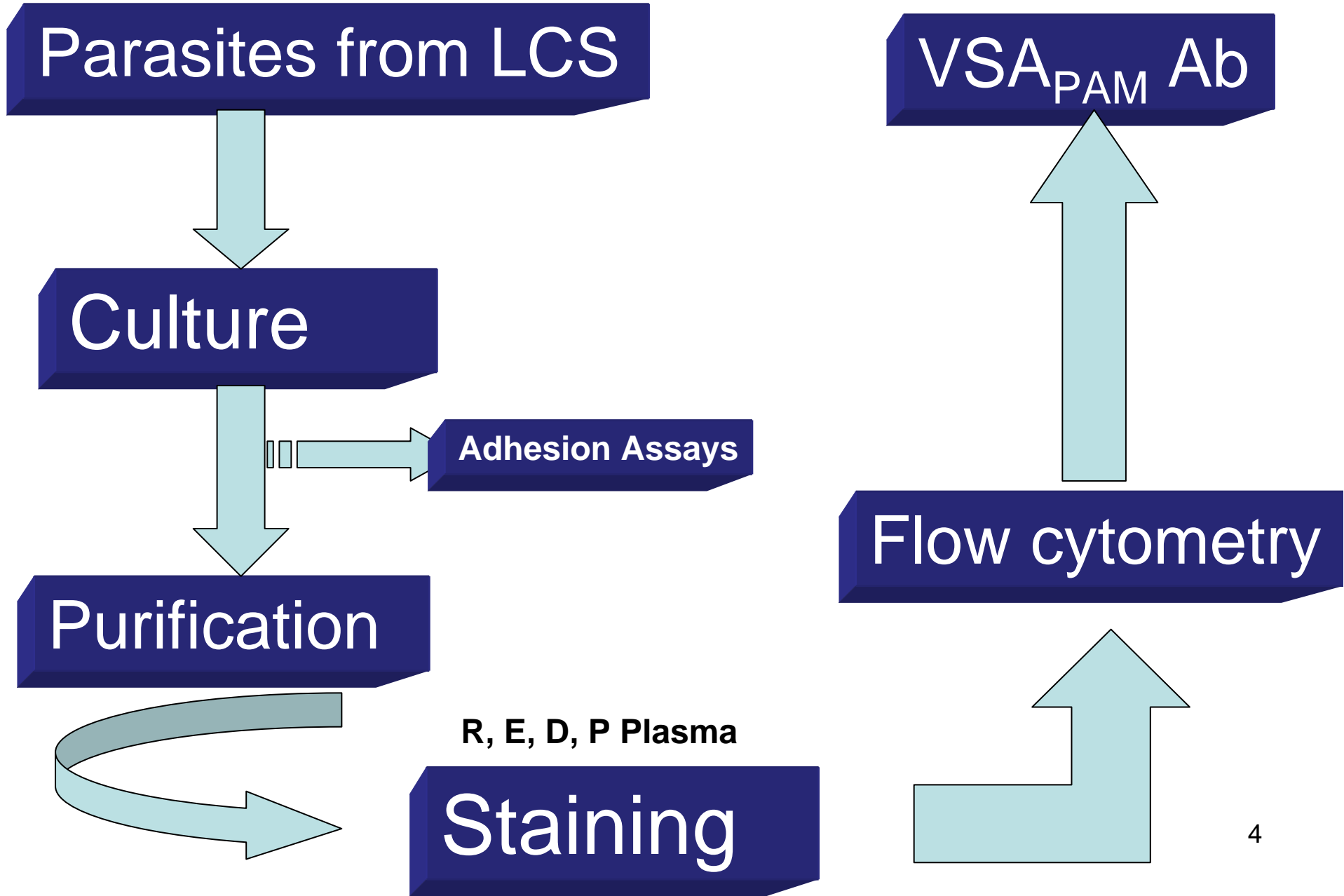
Introduction

- Variant surface antigen –IRBC
- VSA associated with pregnancy-associated malaria (VSA_{PAM}) is antigenically distinct from other VSA
- VSA_{PAM} makes it possible for Pf IRBC to accumulate in the placenta
- VSA_{PAM} suggested to be a conserved antigen (e.g., Fried *et al.* Nature, 1998)
- VAR2CSA, which is a major VSA_{PAM} candidate, exists in a single copy and is highly conserved between genomes (Salanti *et al.* Mol Microbiol, 2003)

Study question?

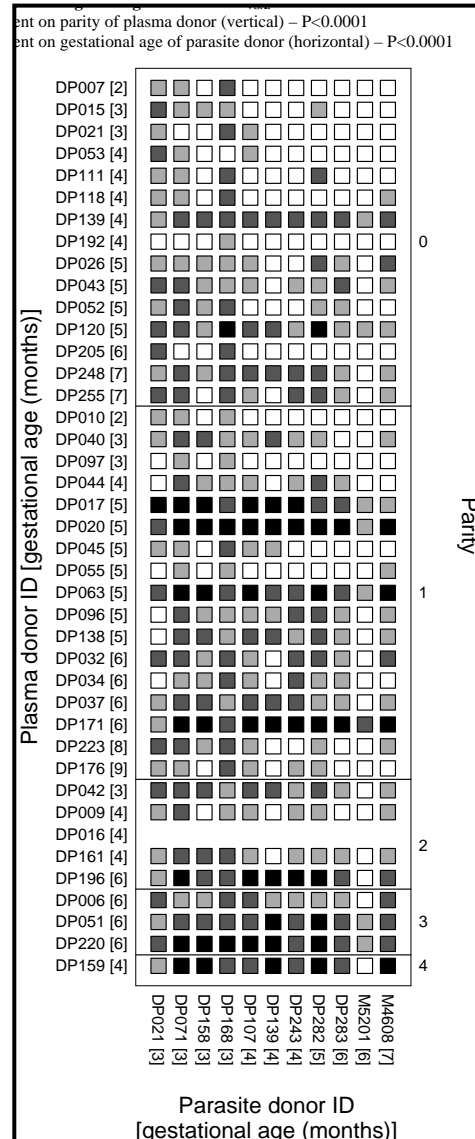
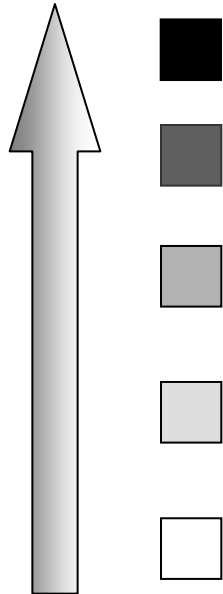
Are VSA_{PAM} variants from field isolates serologically distinct ?

Methods



Results I - Recruitment plasma panel

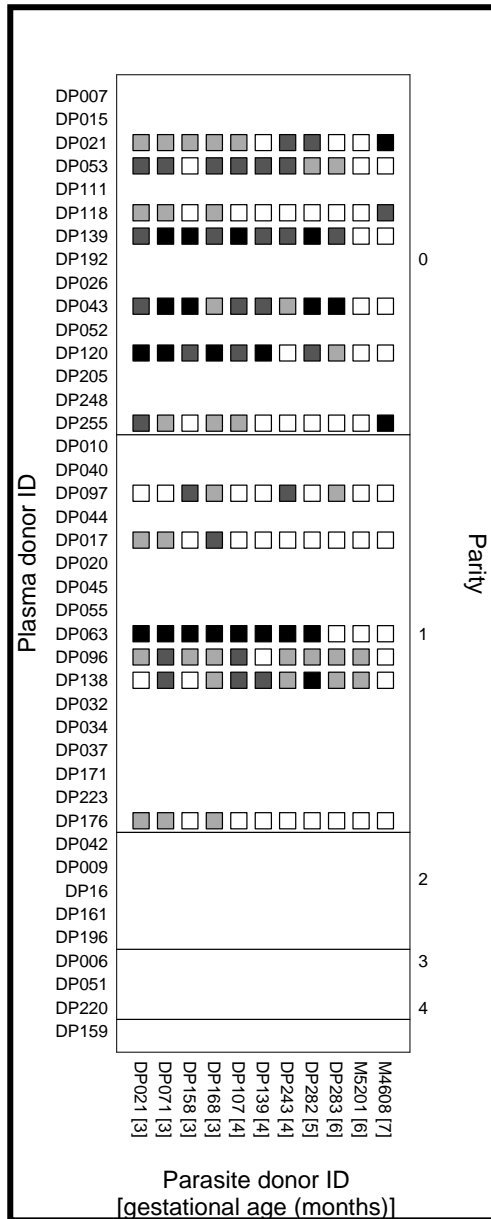
VSA Ab levels



Overall P for model: < 0.0001

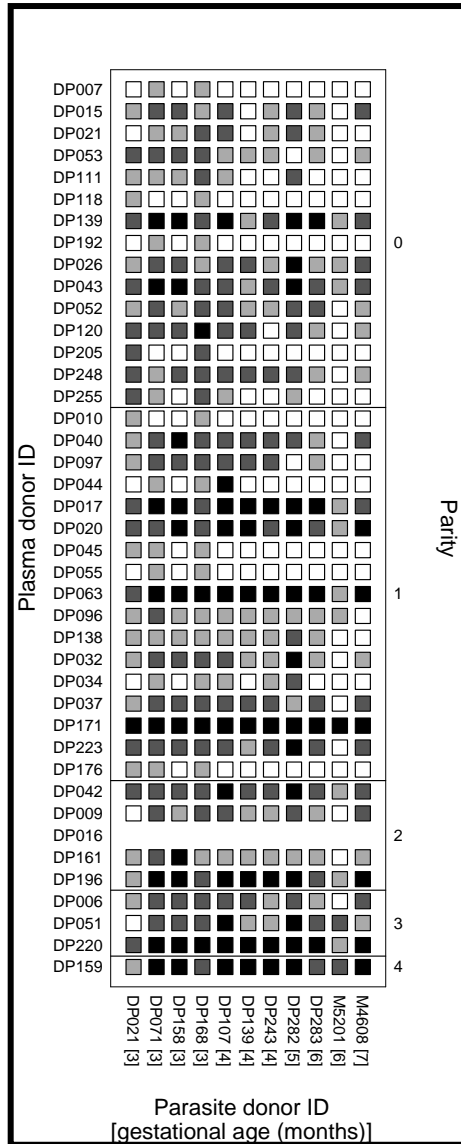
- **IgG recognition dependent on parity of plasma donor (vertical) – $P < 0.0001$**
- **IgG recognition dependent on gestational age of parasite donor (horizontal) – $P < 0.0001$**
- $R^2 = 0.19$

Results I I- Episode plasma panel



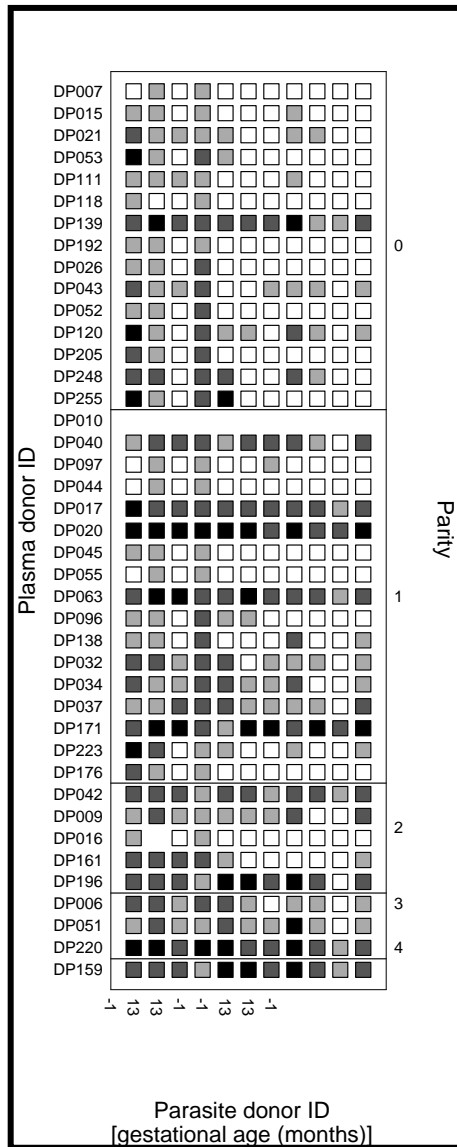
- Overall P for model: 0.0008
- IgG recognition not dependent on parity of plasma donor (vertical) – P=0.06
- IgG recognition dependent on gestational age of parasite donor (horizontal) – P=0.001
- R²=0.10

Results III - Delivery plasma panel



- Overall P for model:
0.69

Results IV - 6 months post partum plasma panel



Overall P for model: <0.0001

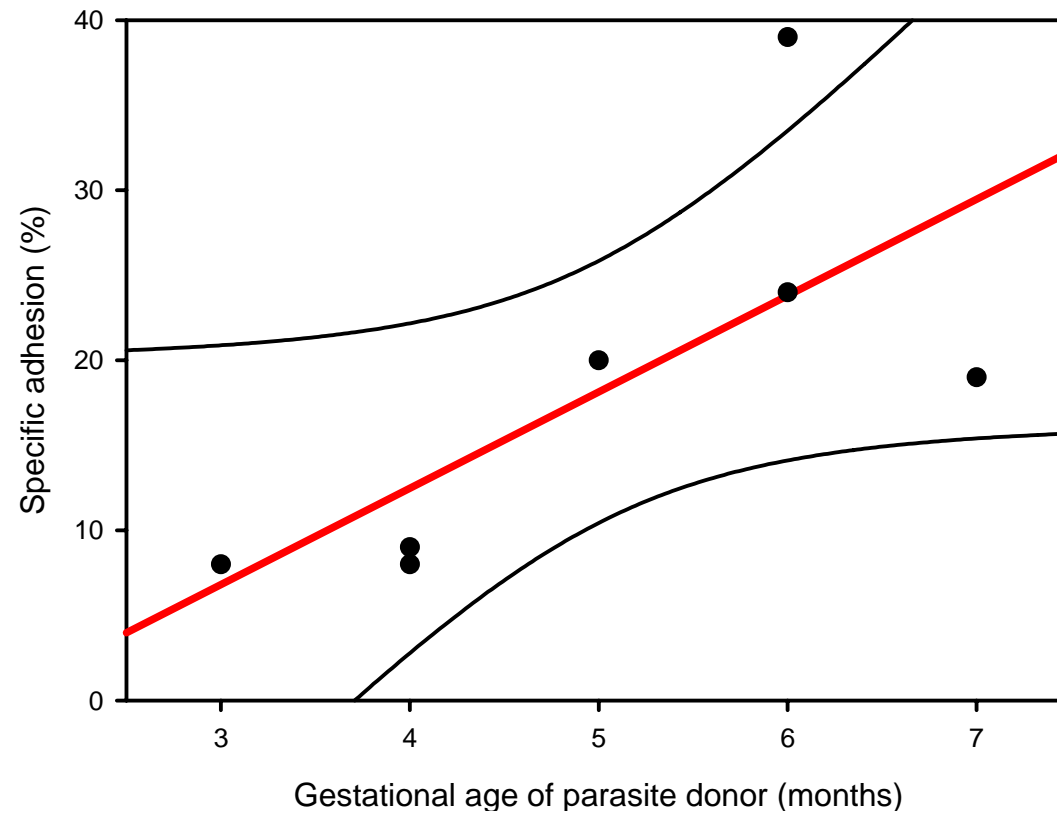
- IgG recognition dependent on parity of plasma donor (vertical) – P<0.0001
- IgG recognition dependent on gestational age of parasite donor (horizontal) – P<0.0001
- R²=0.17

Results V

Adhesion data - an example

P=0.073

CHO-0



Ofori et al MIM 2005

Conclusion

- IgG recognition of VSA_{PAM} depends on parity of plasma donor
 - Multigravidae recognises VSA_{PAM} better than Primi
- This recognition also depends on the gestational age of parasite donor
 - Parasites isolated from women with higher gestational age were poorly recognised.

Conclusion cont'

- All isolates tested so far adhered significantly to CSA but not to CD54 and CD36.
- Parasites isolated from women with higher gestational age adhered more strongly to CSA.
- We therefore speculate the possible existence of serologically distinct VSA_{PAM} variants

In other words.....

- Individual parasite clones seems to possess several antigenically distinct VSA_{PAM} molecules
- The expression of these antigens is probably controlled by the host immunity in a manner similar to that previously demonstrated for VSA in non-pregnant individuals (Bull et al 1998, Ofori et al 2002)

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Study participants

Field Assistants

NMIMR

- B D Akanmori
- David Ofori-Adjei
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CMP

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