14th International Donor Registry Conference & WMDA Meetings
25 – 29 June, 2024 – Cape Town, South Africa
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# Determinants of stem cell donation probability

Alexander Schmidt, Jürgen Sauter

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# Idea and overview

Idea: Determining the annual donation probability (ADP) of different donor groups based on actual donations (2021-2023) and group sizes

- 14,457 donations from DKMS Germany
- 277 donations from DKMS Chile

No differentiation between reasons for non-donations

- Not requested, not available, planned collection cancelled, …

Donor groups defined by

- Age (9 groups for Germany, 3 for Chile)
- Sex
- CMV status available or not
- Genotype frequency (9 groups for Germany, 3 for Chile)
- -> 324 groups for Germany, 36 for Chile
- Not: completeness of HLA information

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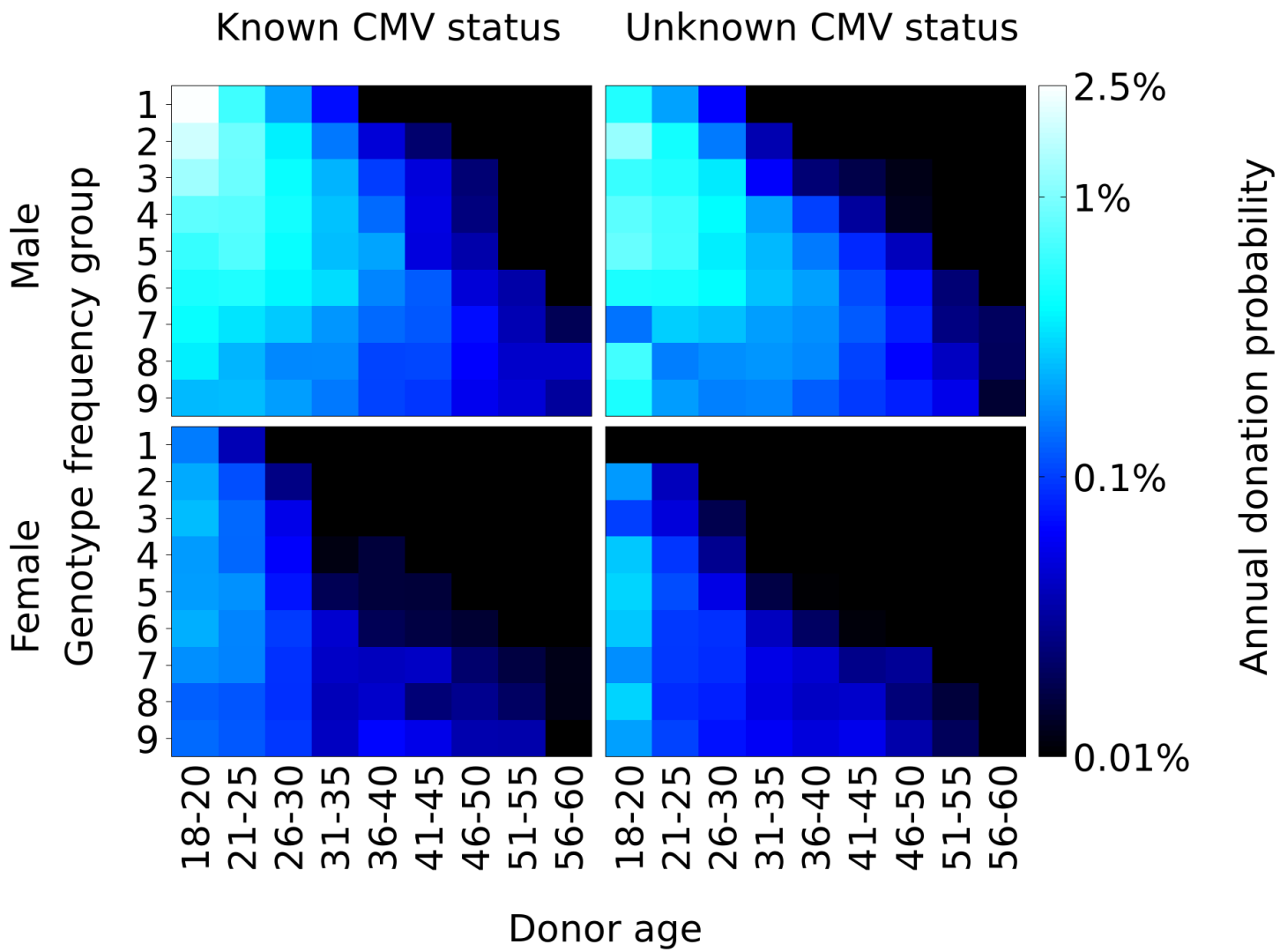
# Results for DKMS Germany



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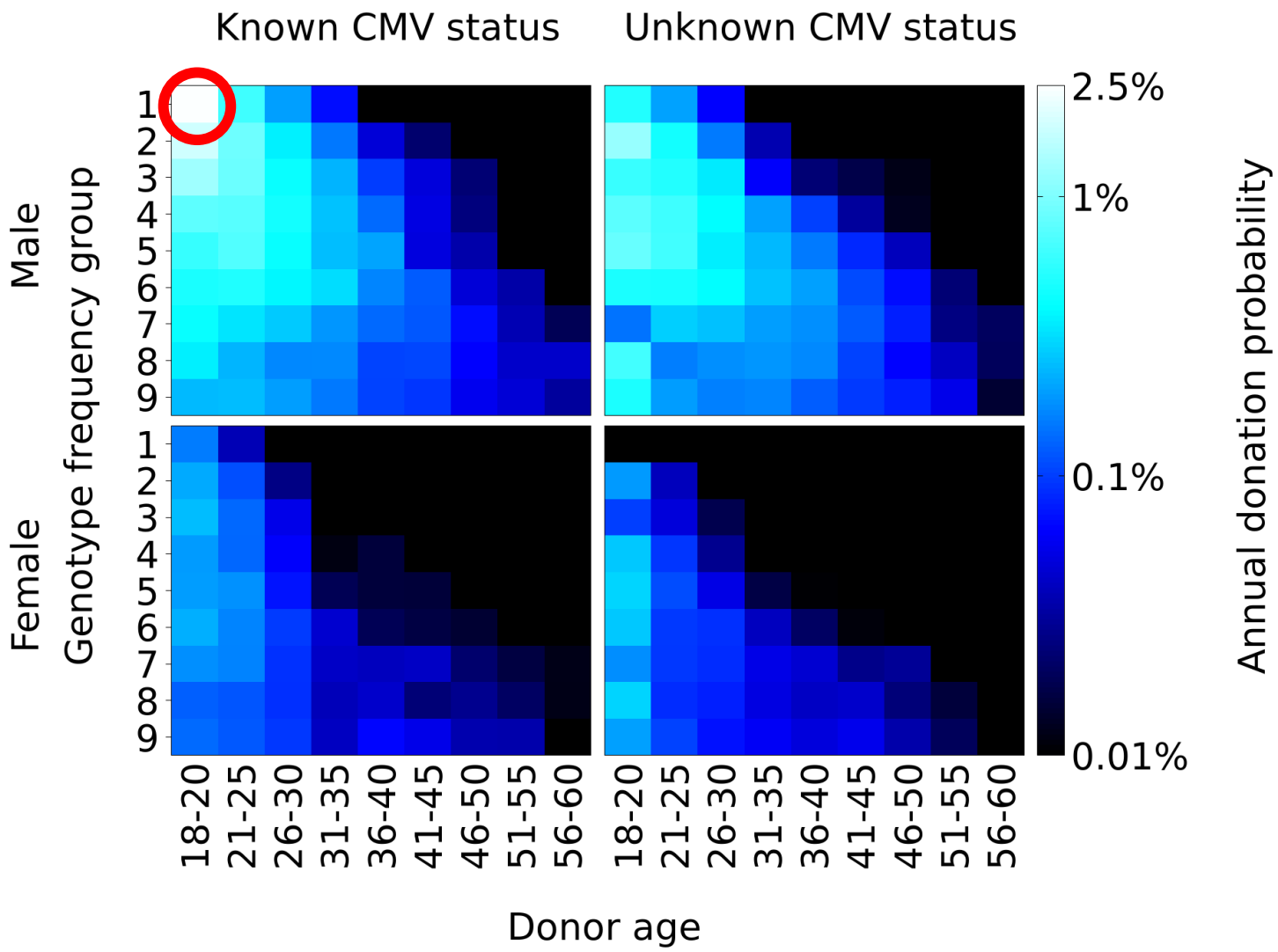


Highest annual donation probability (2.4%)

- 18-20 years
- Male
- Known CMV status
- Very frequent genotype

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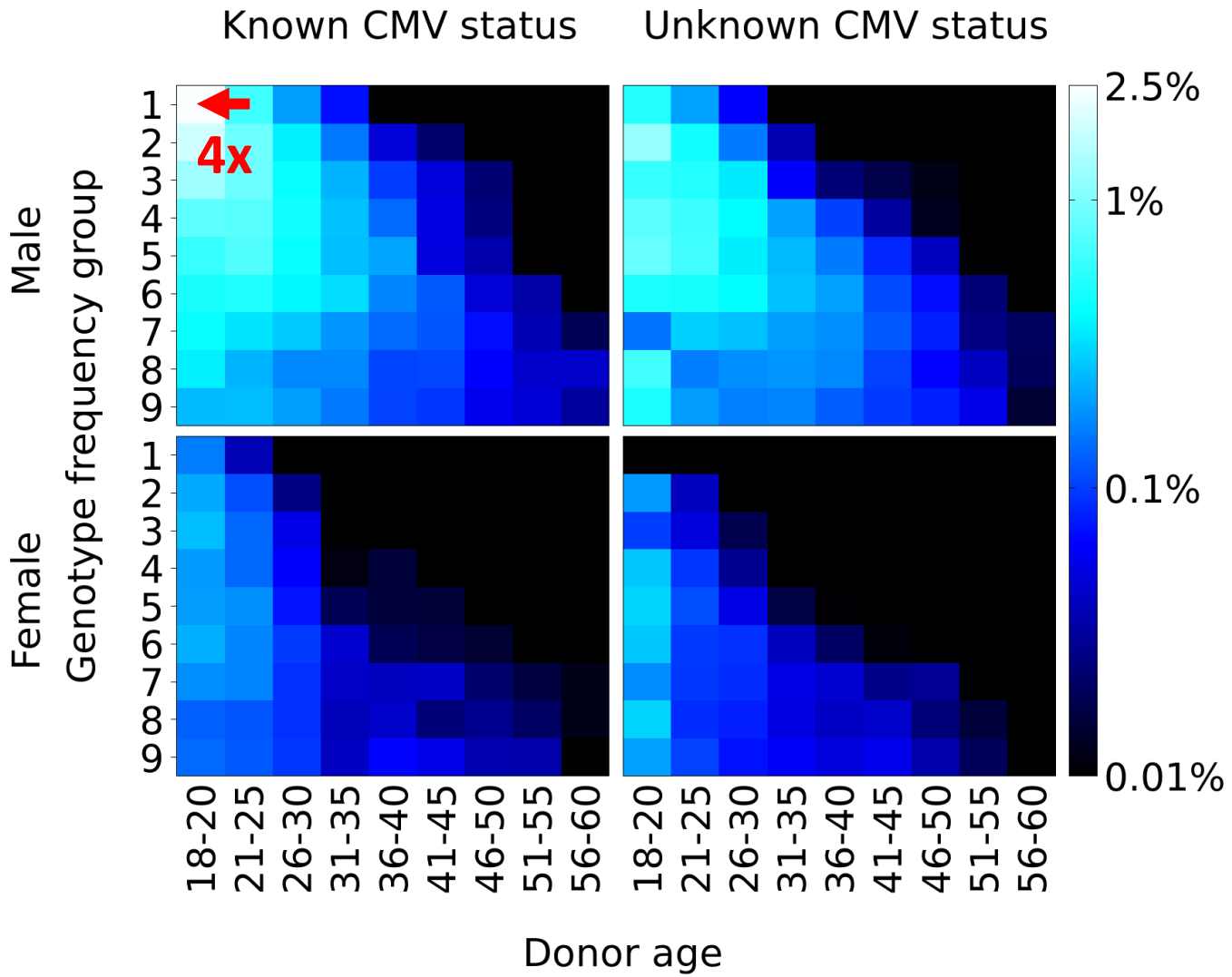


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Compared to

- 21-25 years: 4-fold higher ADP

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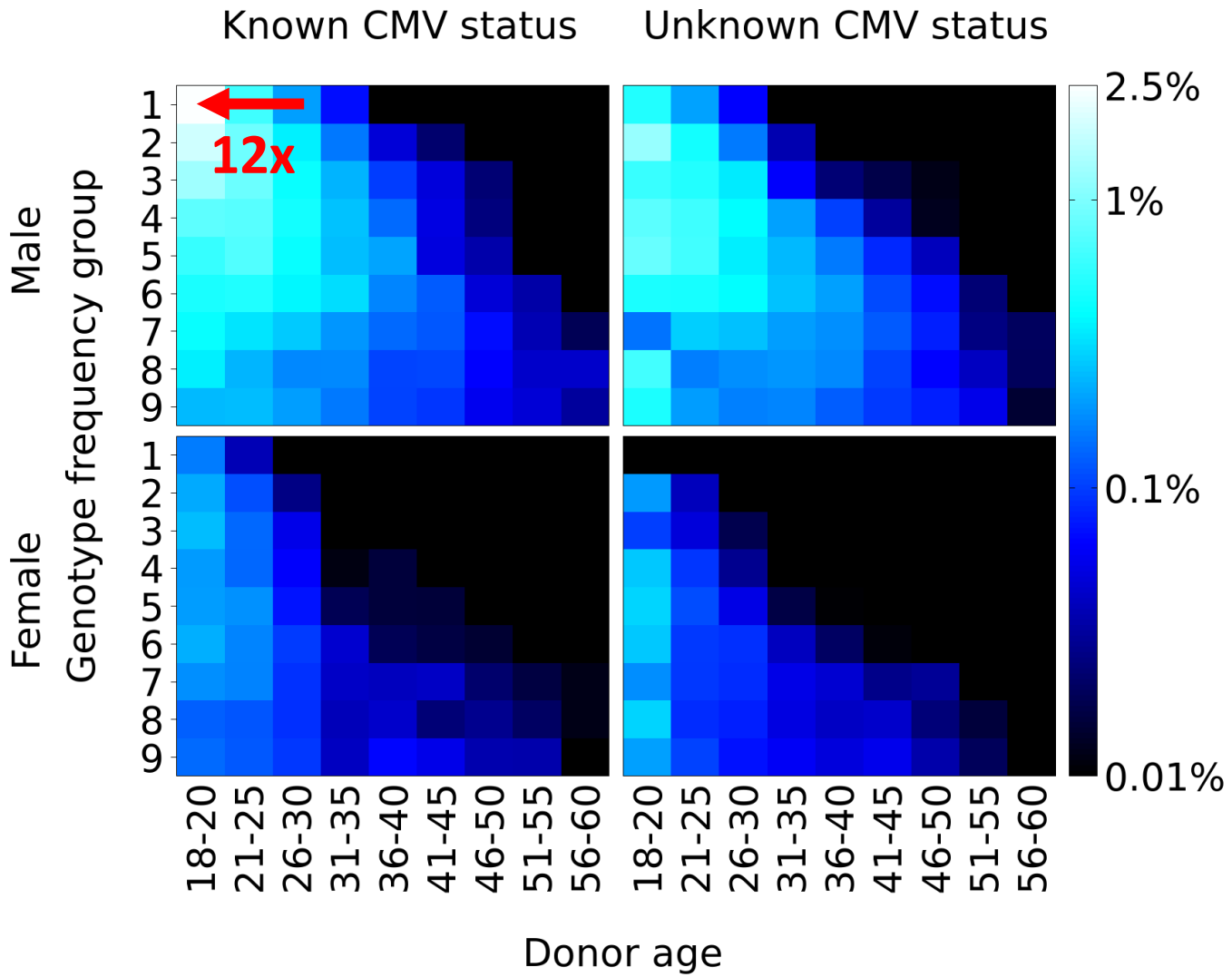


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- 21-25 years: 4-fold higher ADP
- 26-30 years: 12-fold higher ADP

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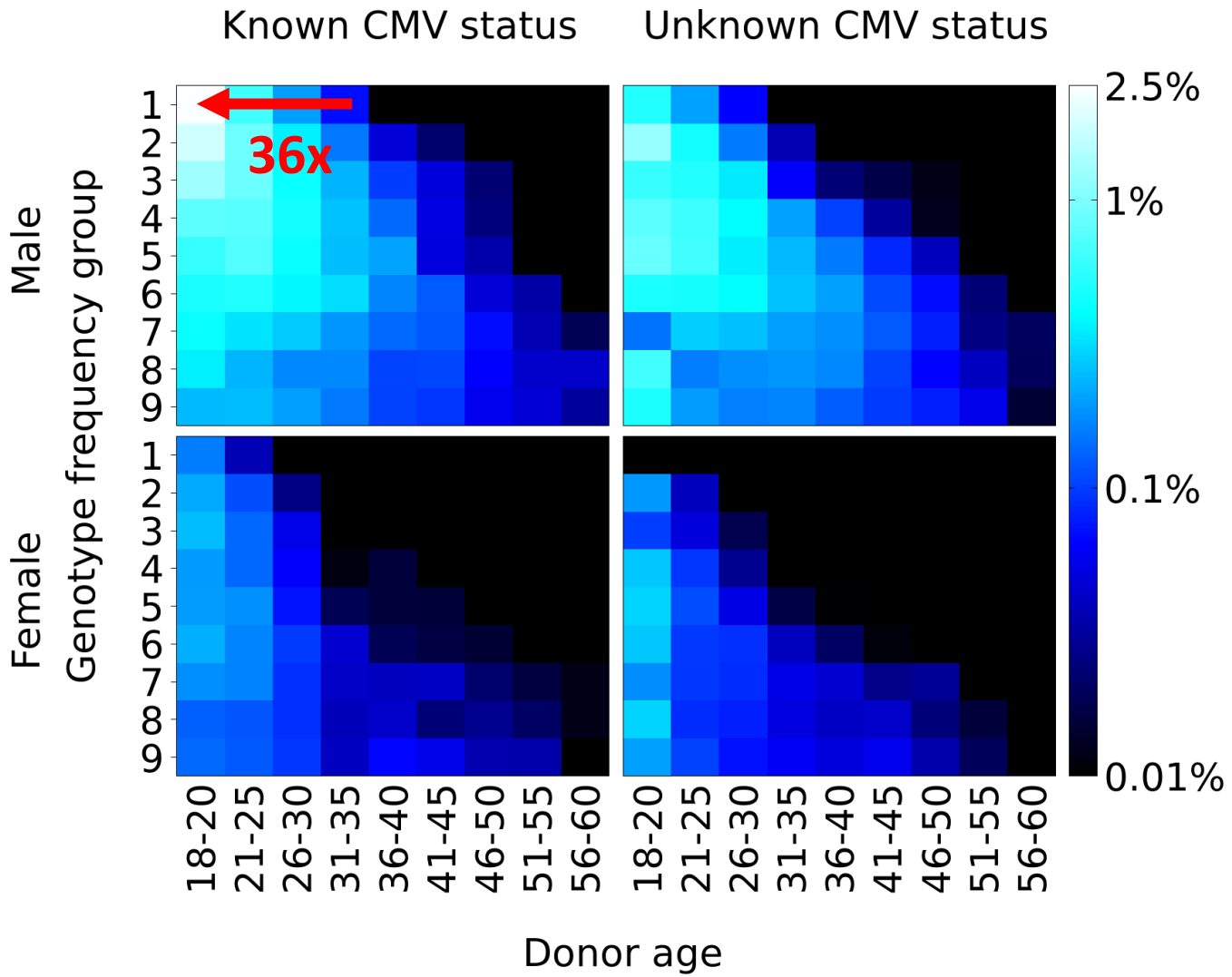


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- 26-30 years: 12-fold higher ADP
- 31-35 years: 36-fold higher ADP

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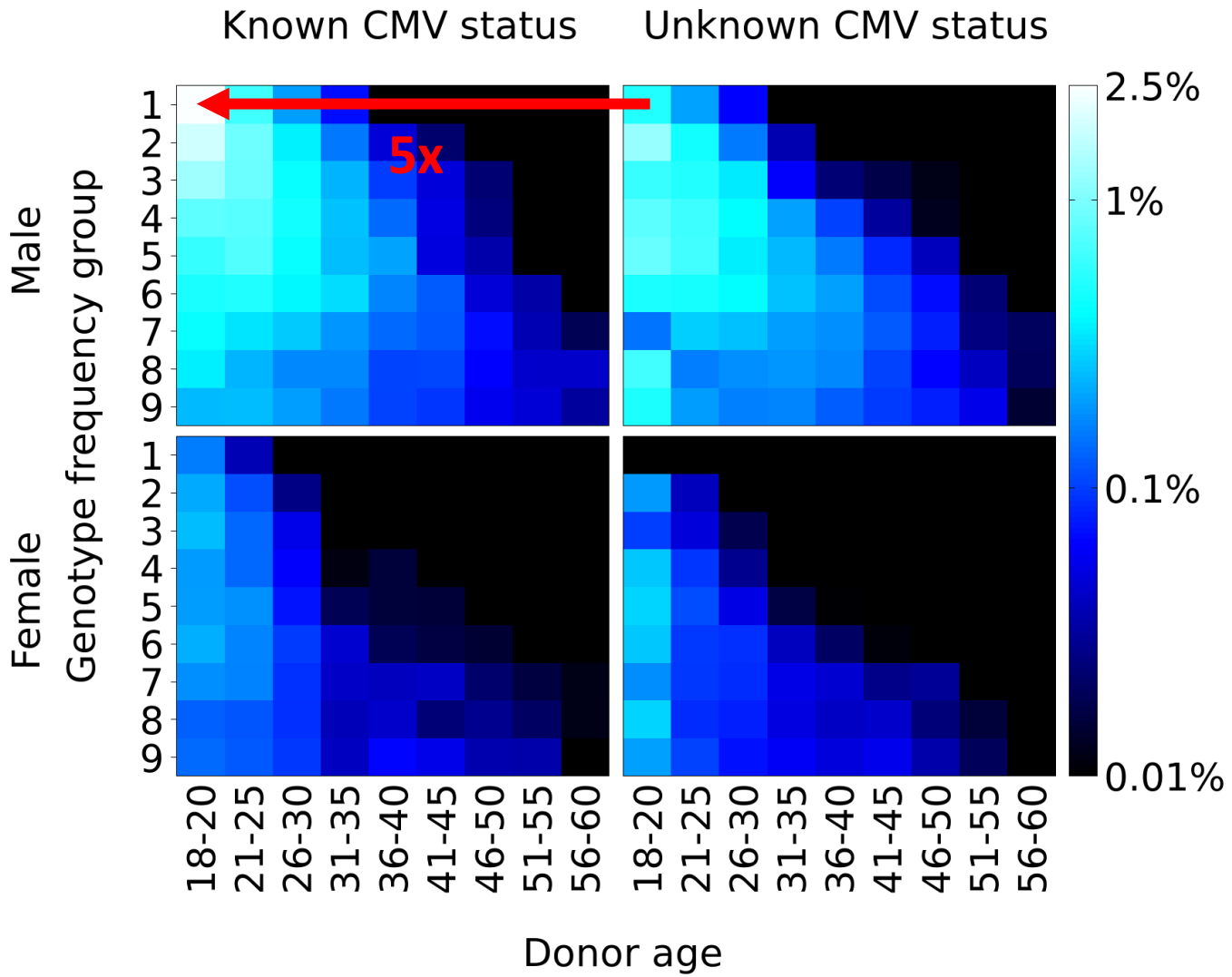


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- Unknown CMV status: 5-fold higher ADP

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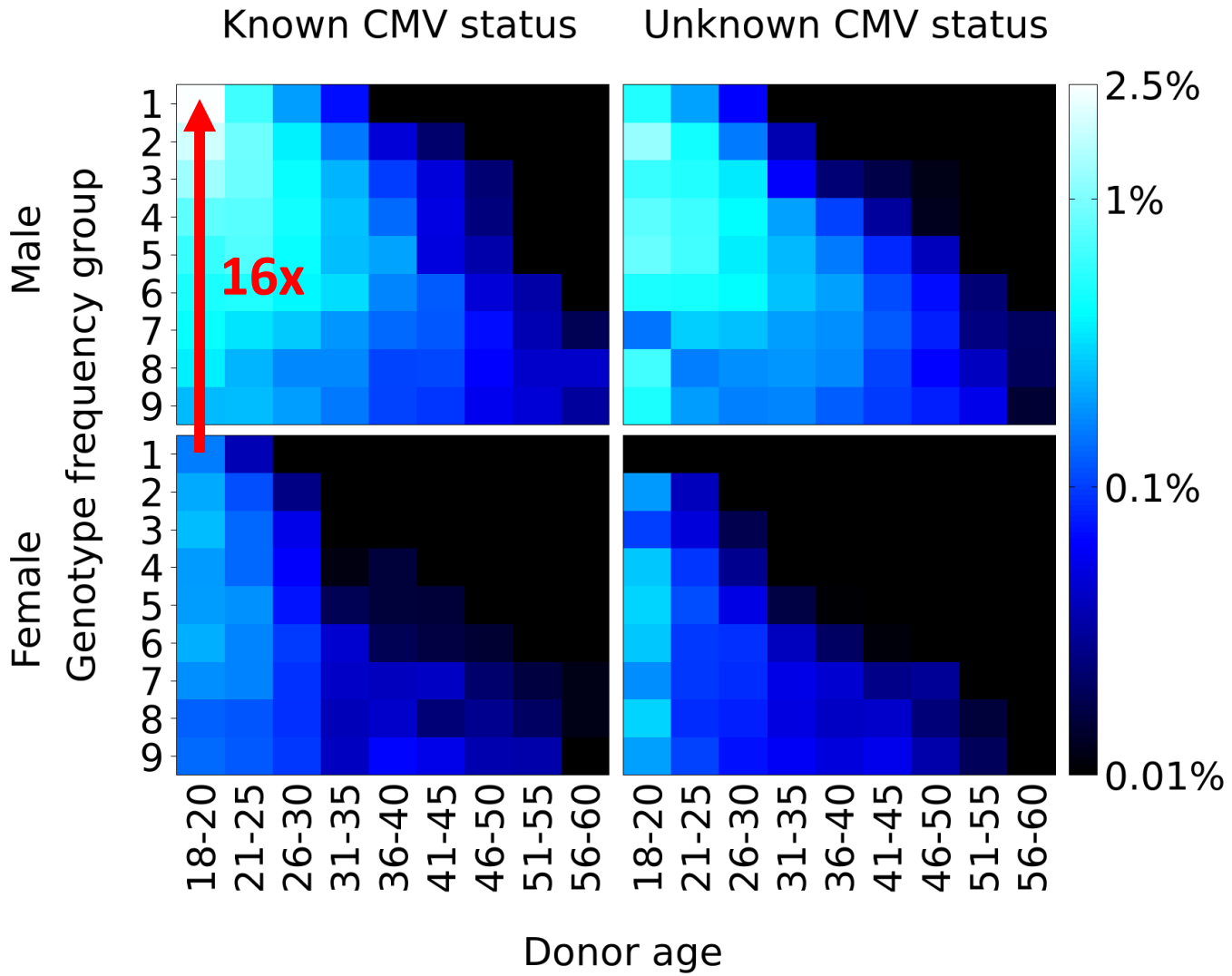


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- 18-20 years
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Compared to

- 21-25 years: 4-fold higher ADP
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- 31-35 years: 36-fold higher ADP
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- Female: 16-fold higher ADP

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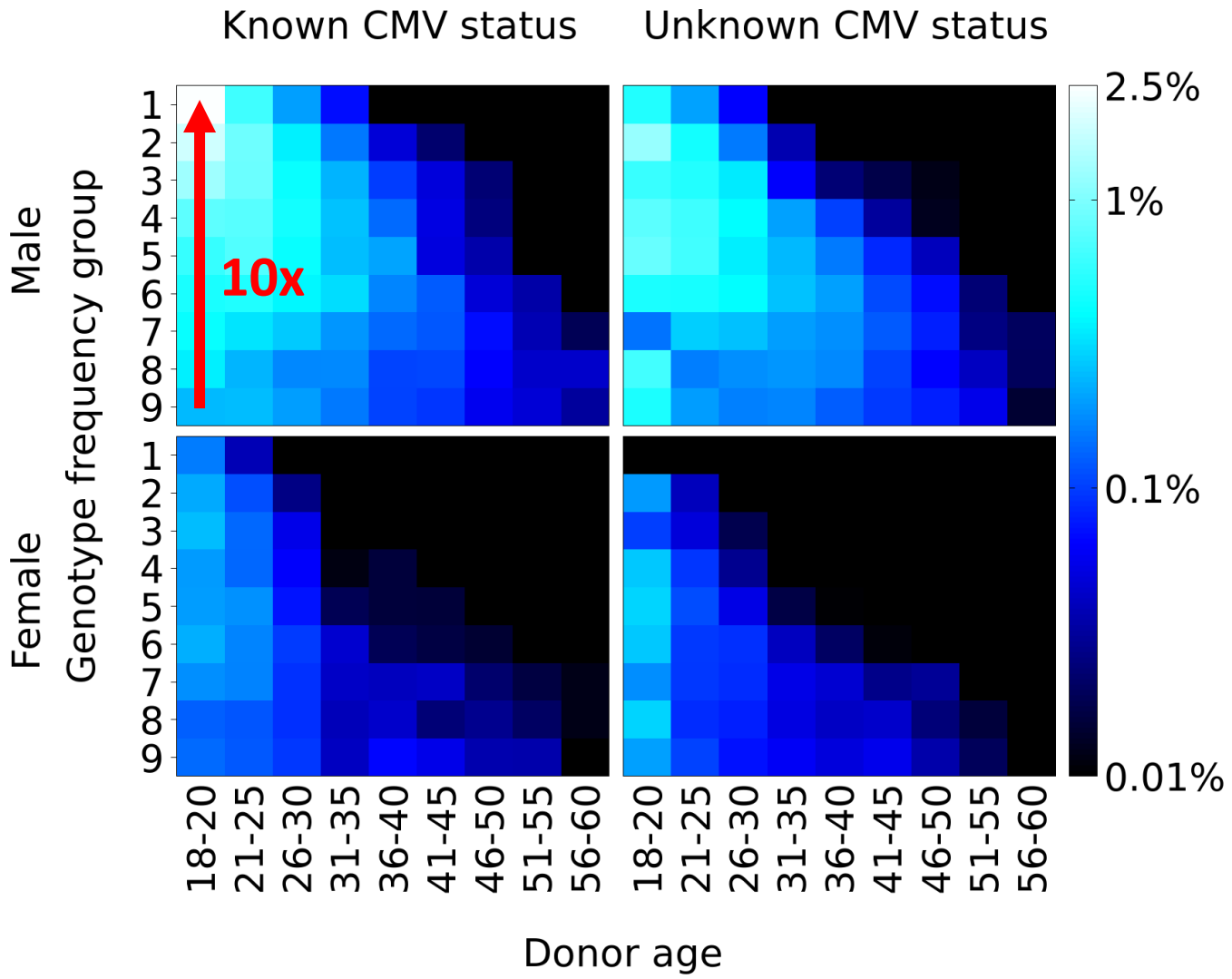


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- Female: 16-fold higher ADP
- Very rare genotype: 10-fold higher ADP

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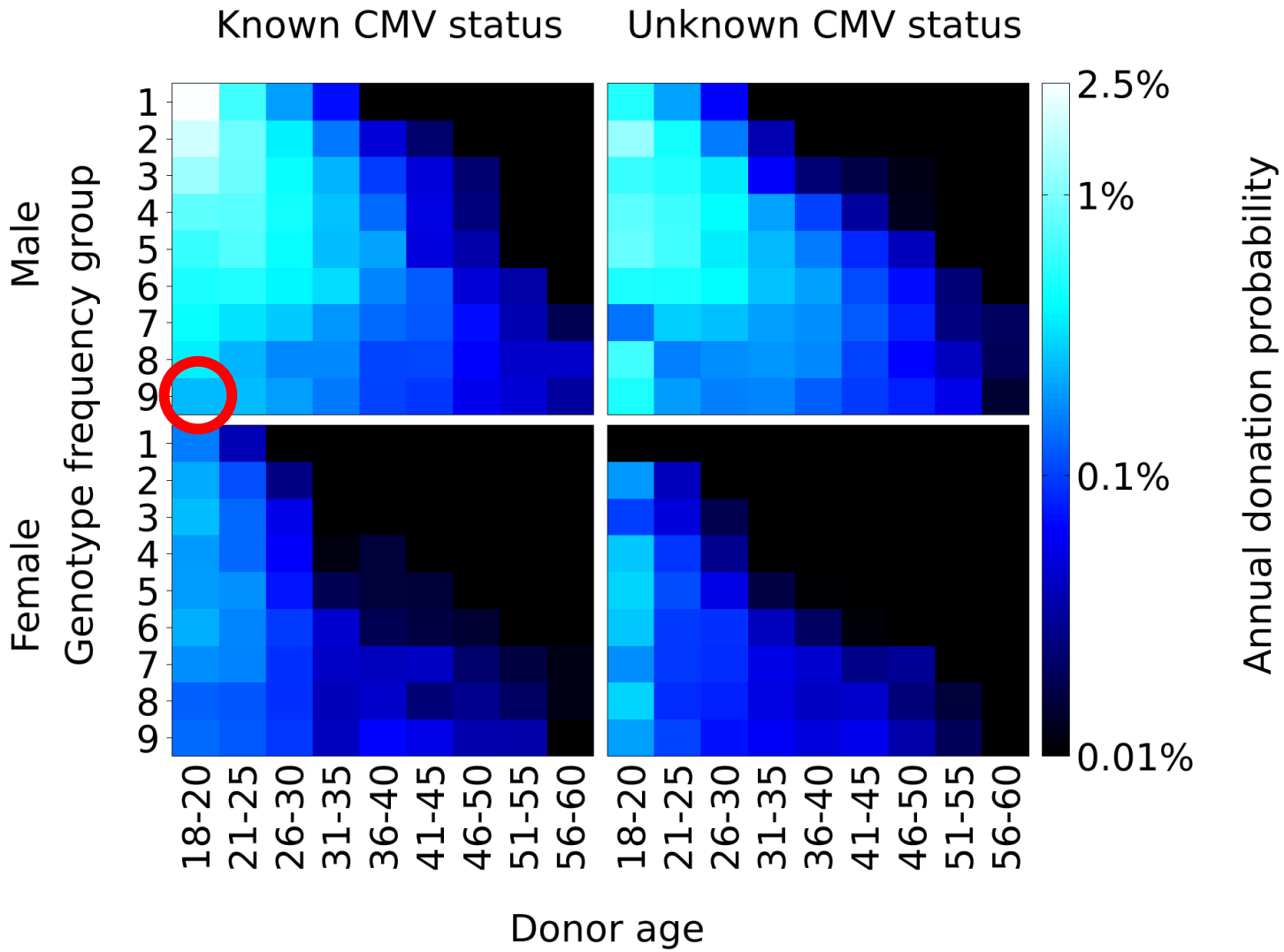


New reference donor (ADP=0.24%)

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- Very rare genotype

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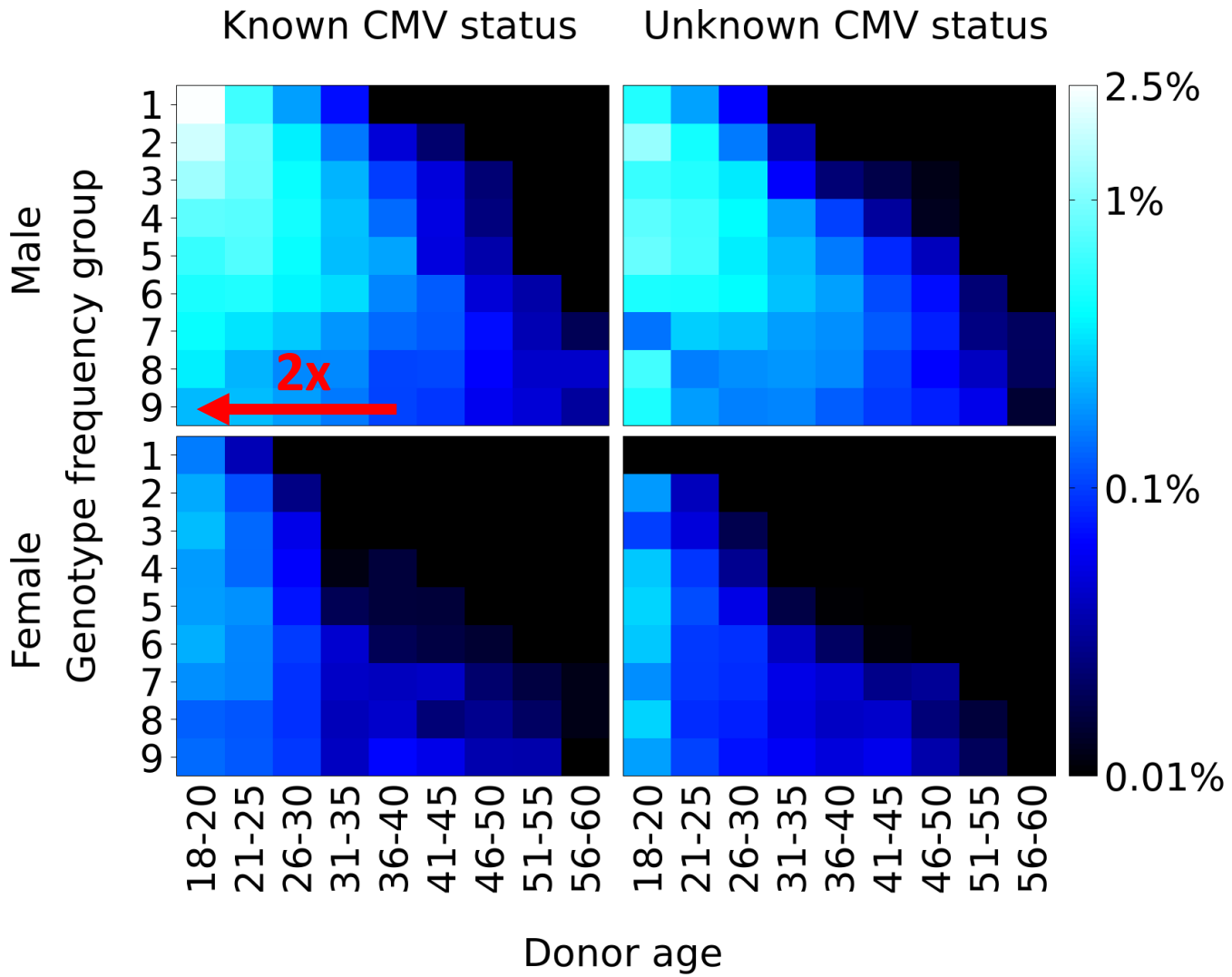


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Compared to

- 36-40 years: 2-fold higher ADP

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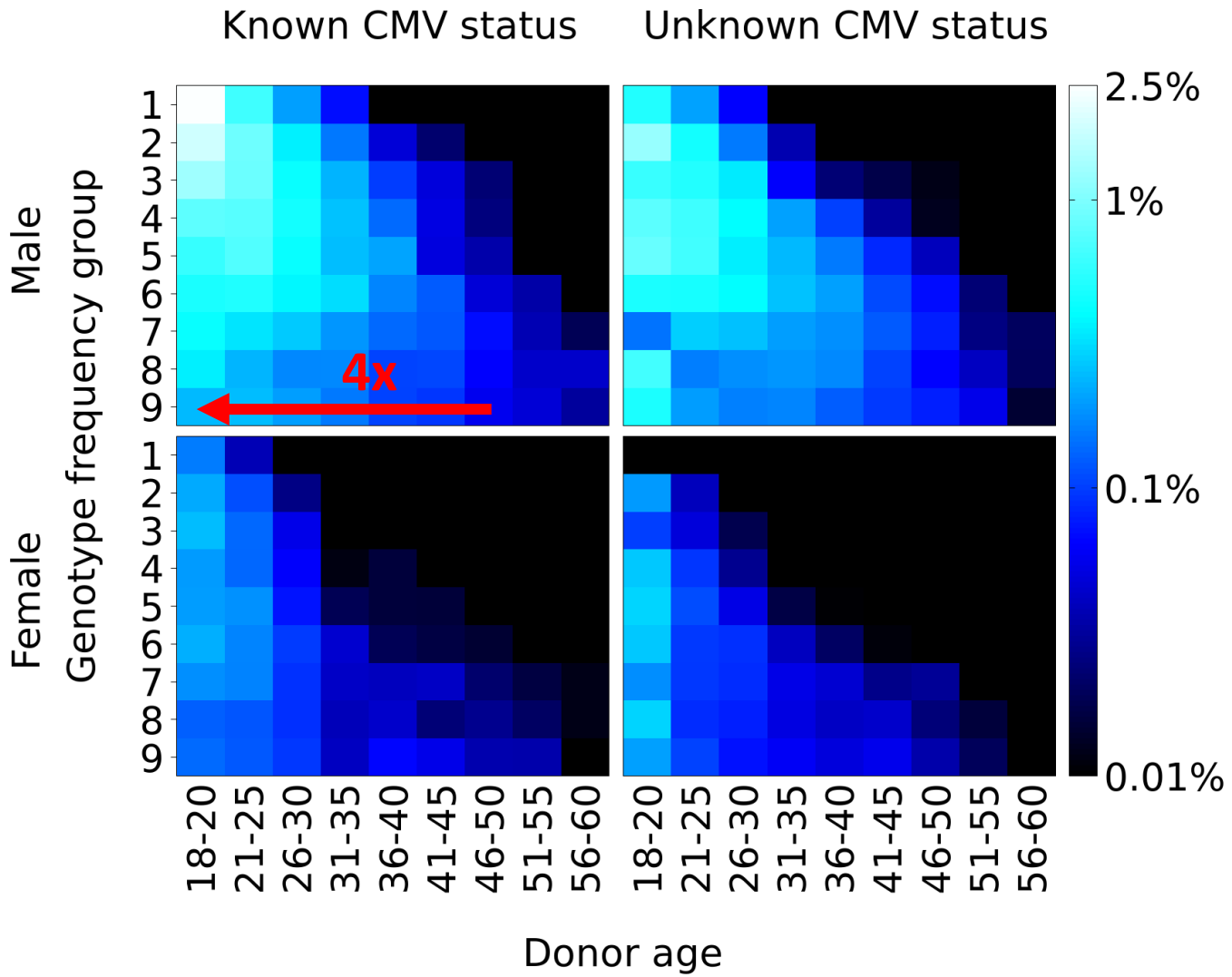


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Compared to

- 36-40 years: 2-fold higher ADP
- 46-50 years: 4-fold higher ADP

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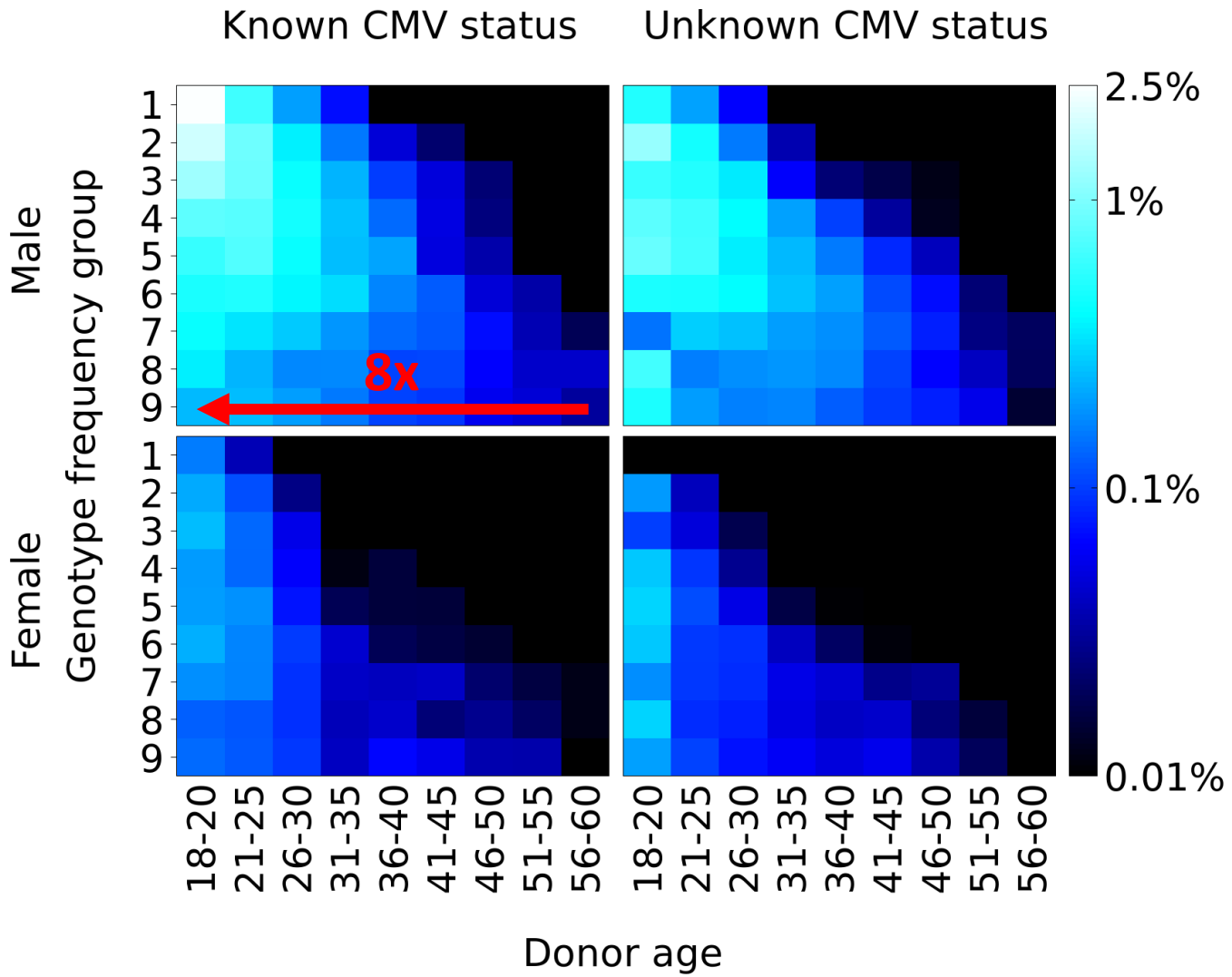


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- 56-60 years: 8-fold higher ADP

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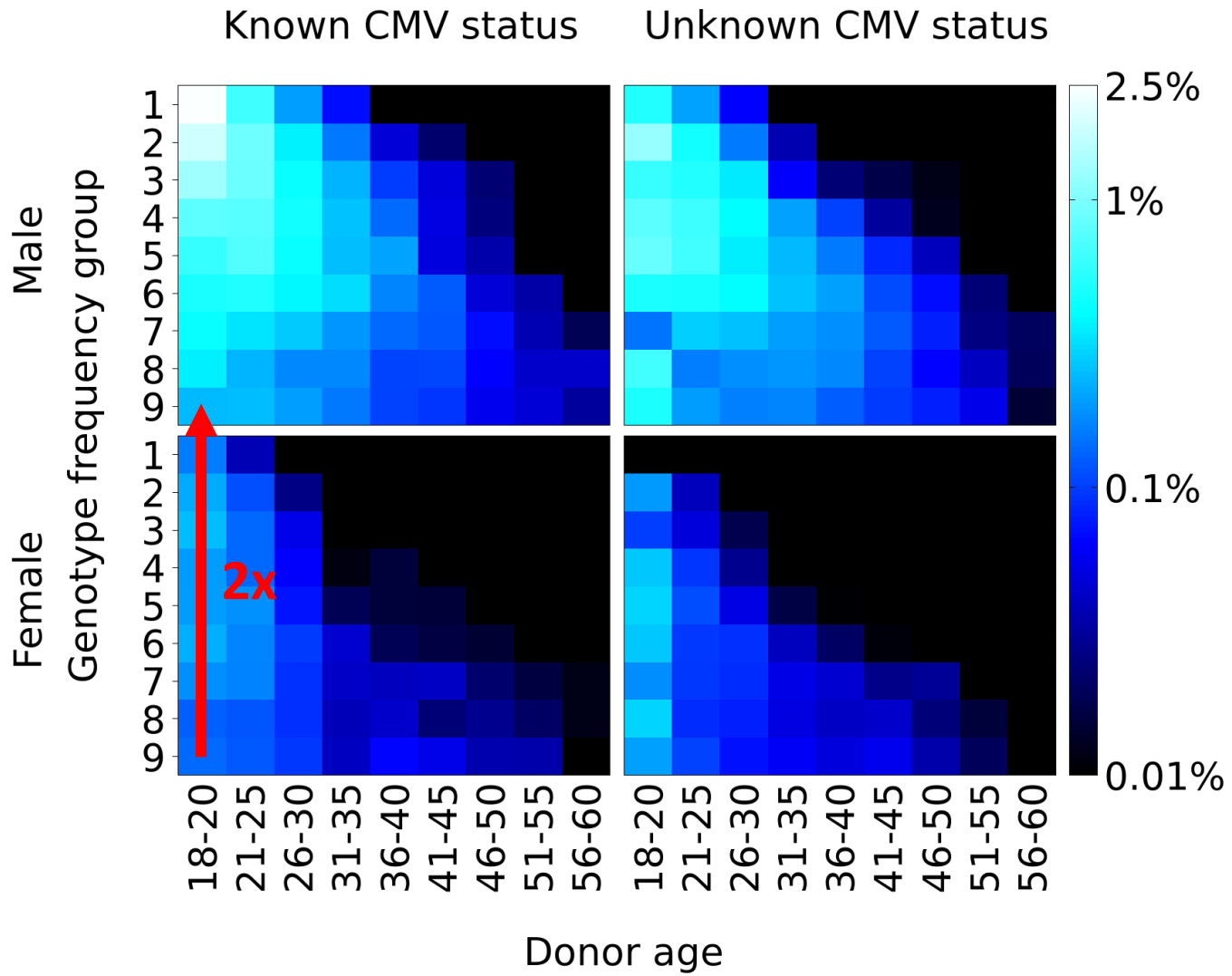


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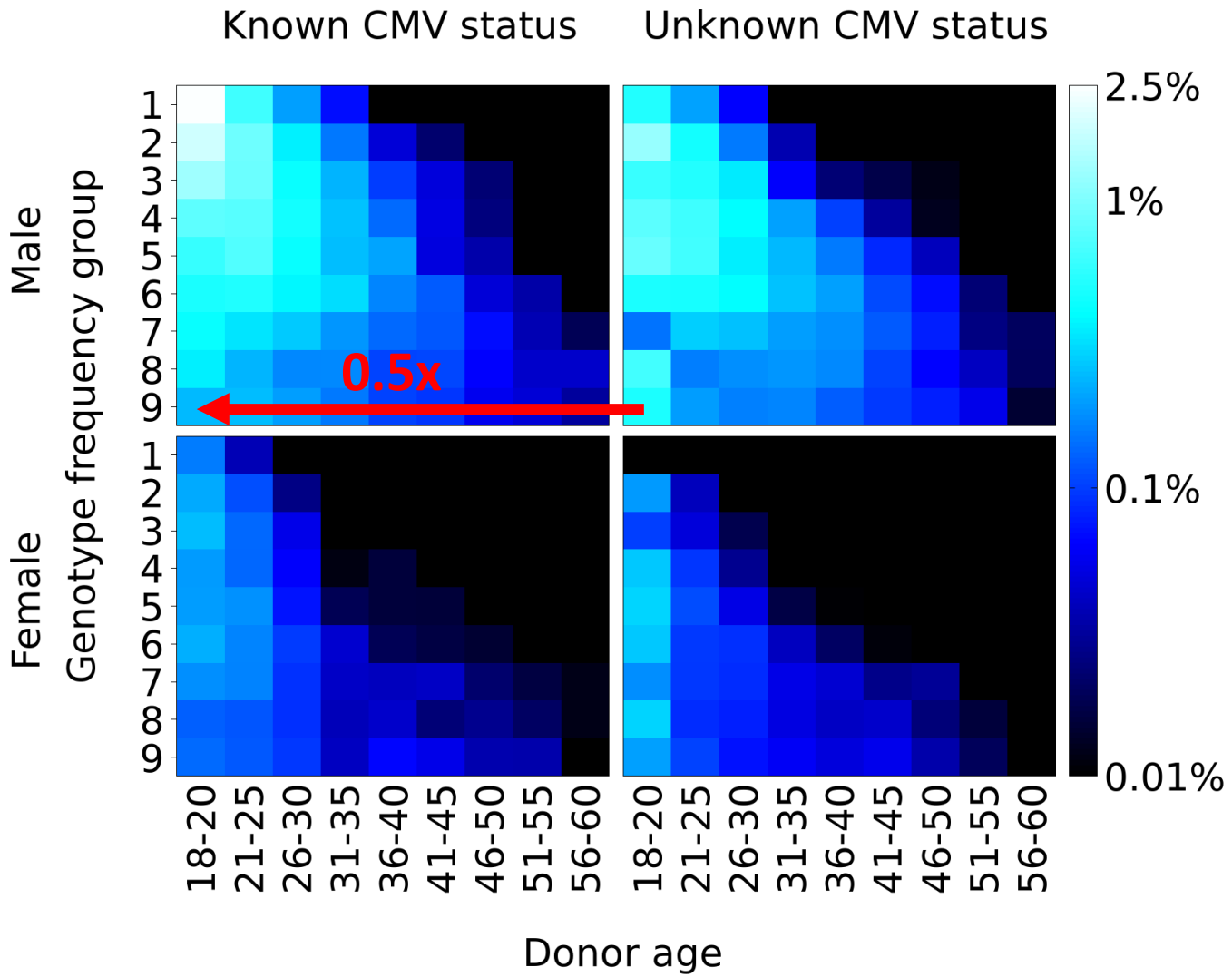


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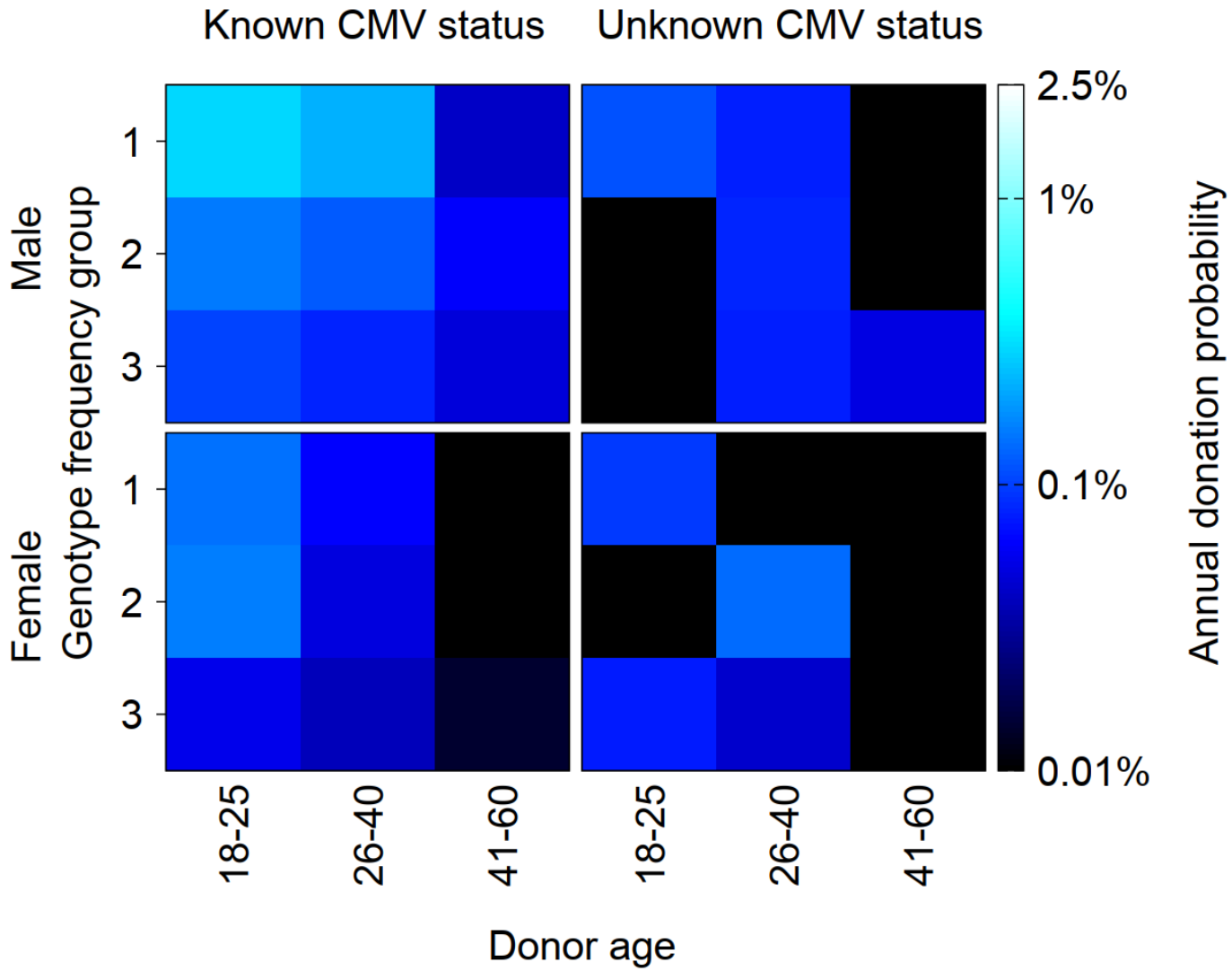
- 56-60 years: 8-fold higher ADP
- Female: 2-fold higher ADP
- Unknown CMV status: 0.5-fold ADP (?)

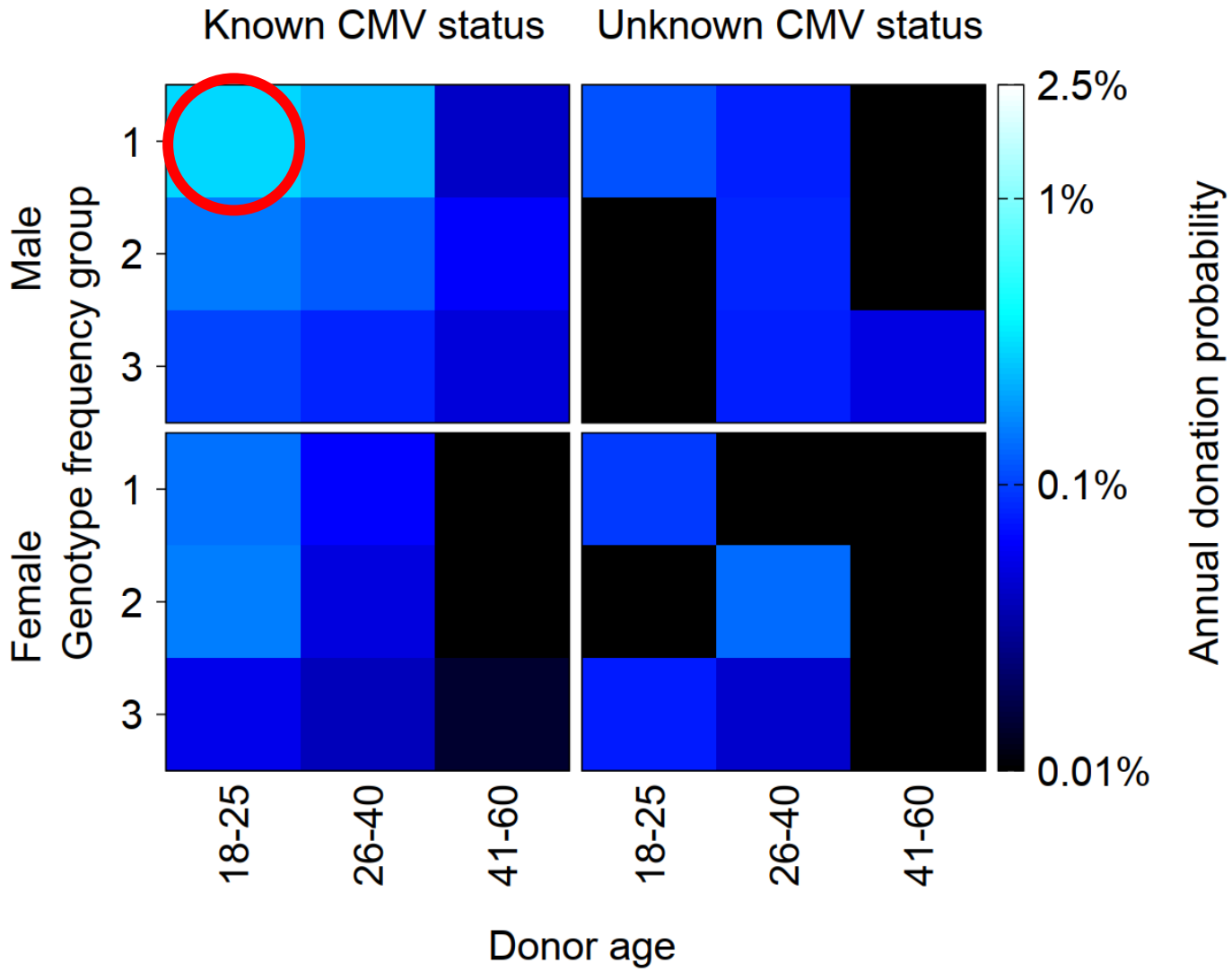
# Results for DKMS Chile




On average, 8 donations per square (compared to 45 in the analysis of German data)

- The results should be interpreted with caution

# Results for DKMS Chile




Same donor group with highest ADP, however

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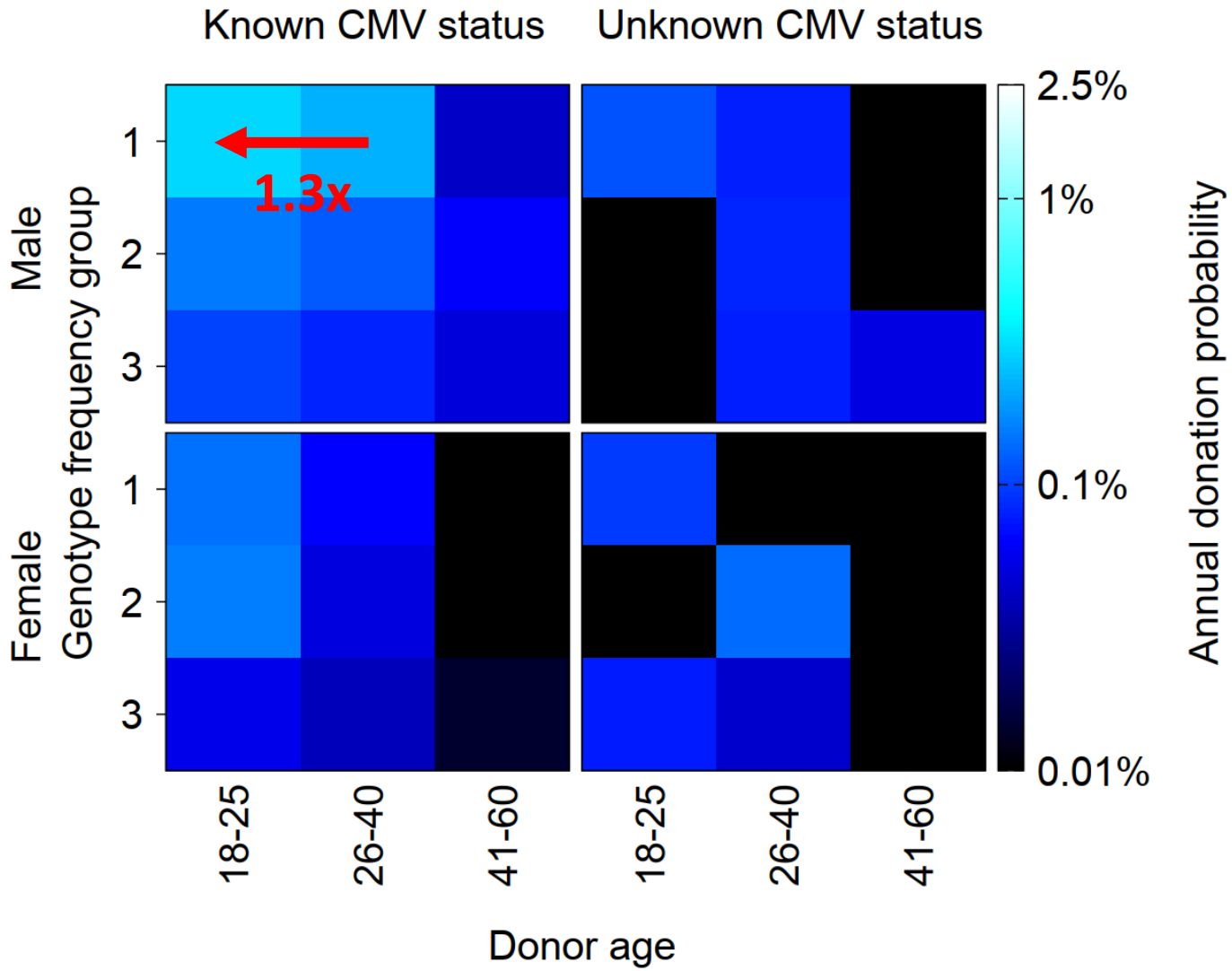


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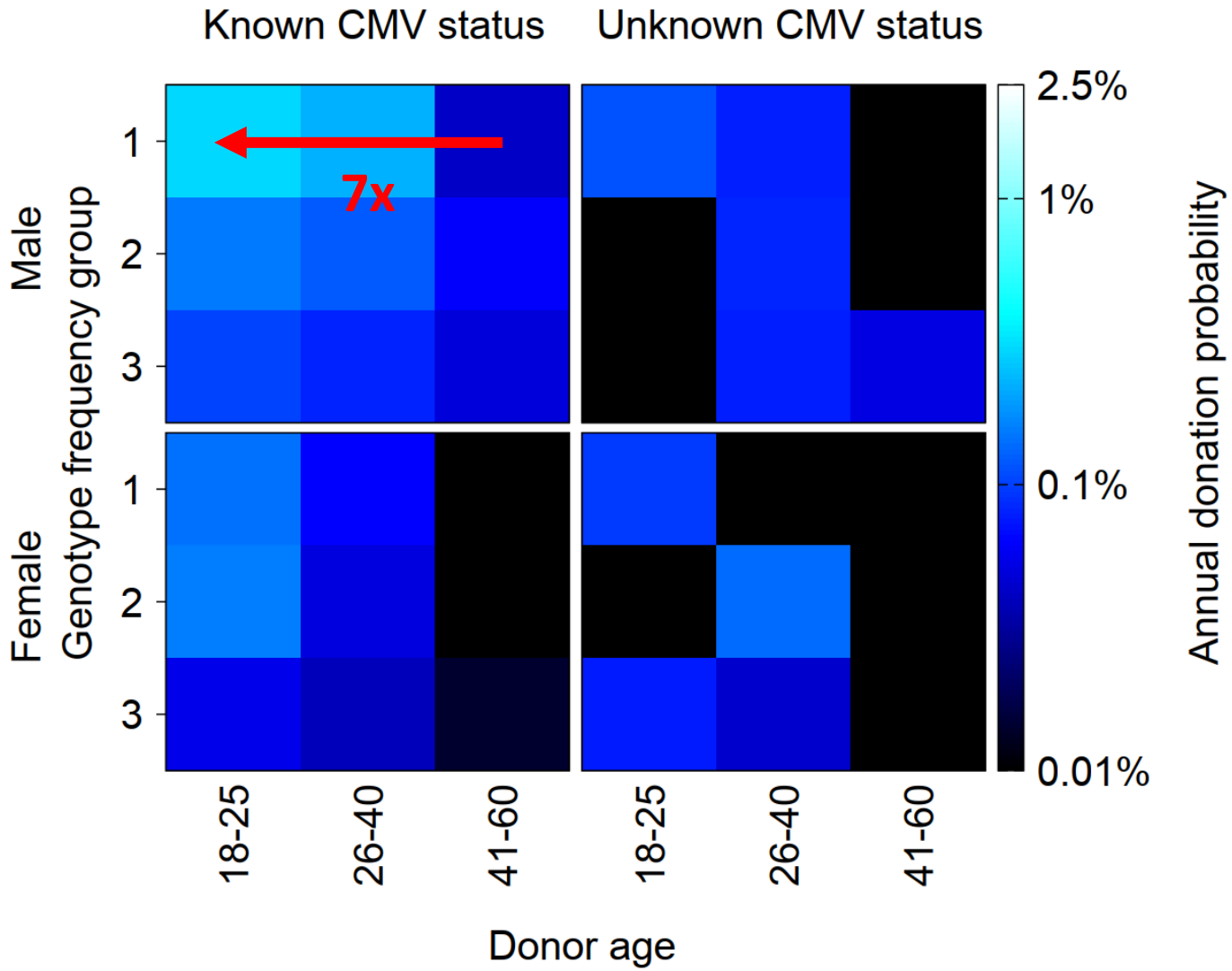


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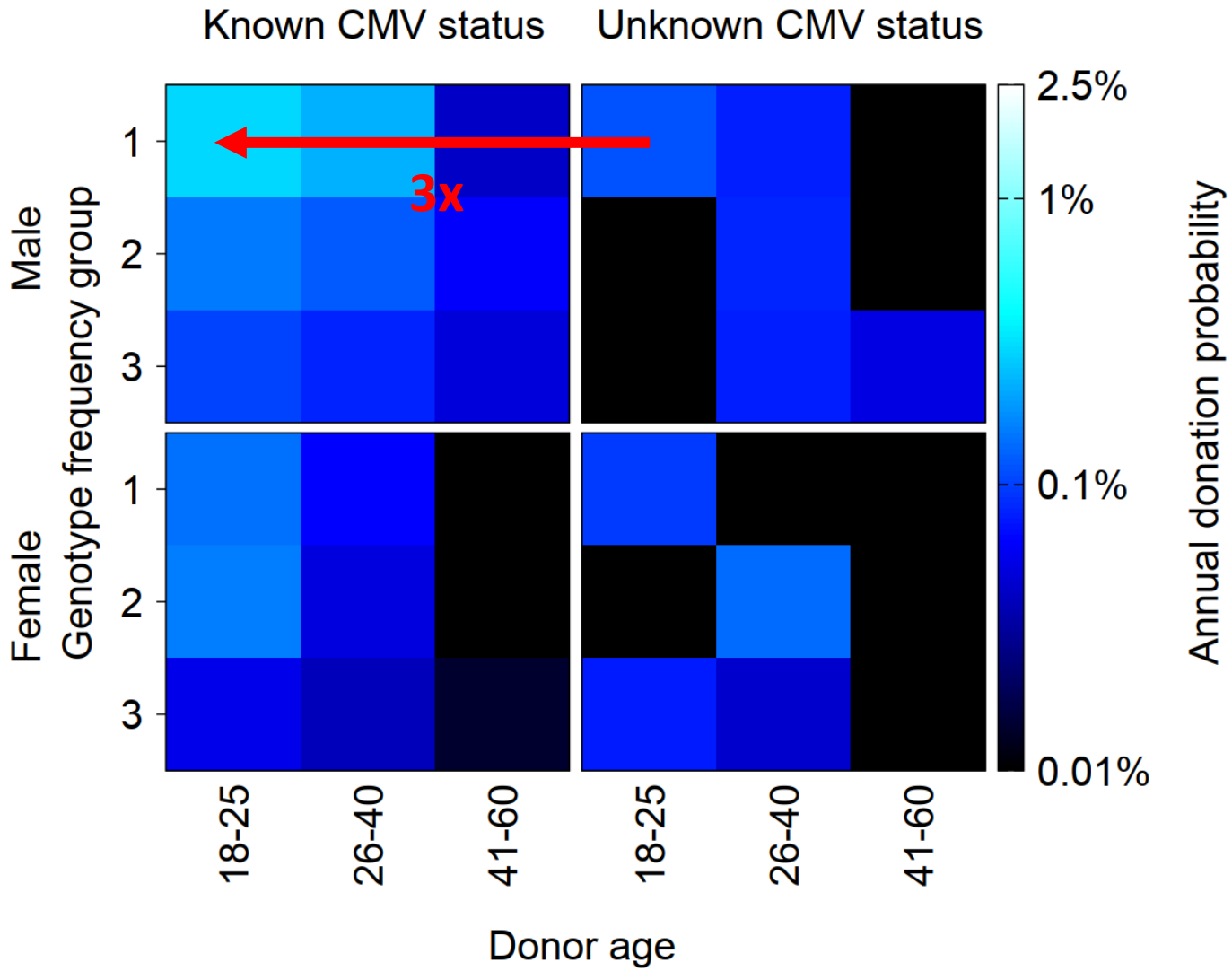


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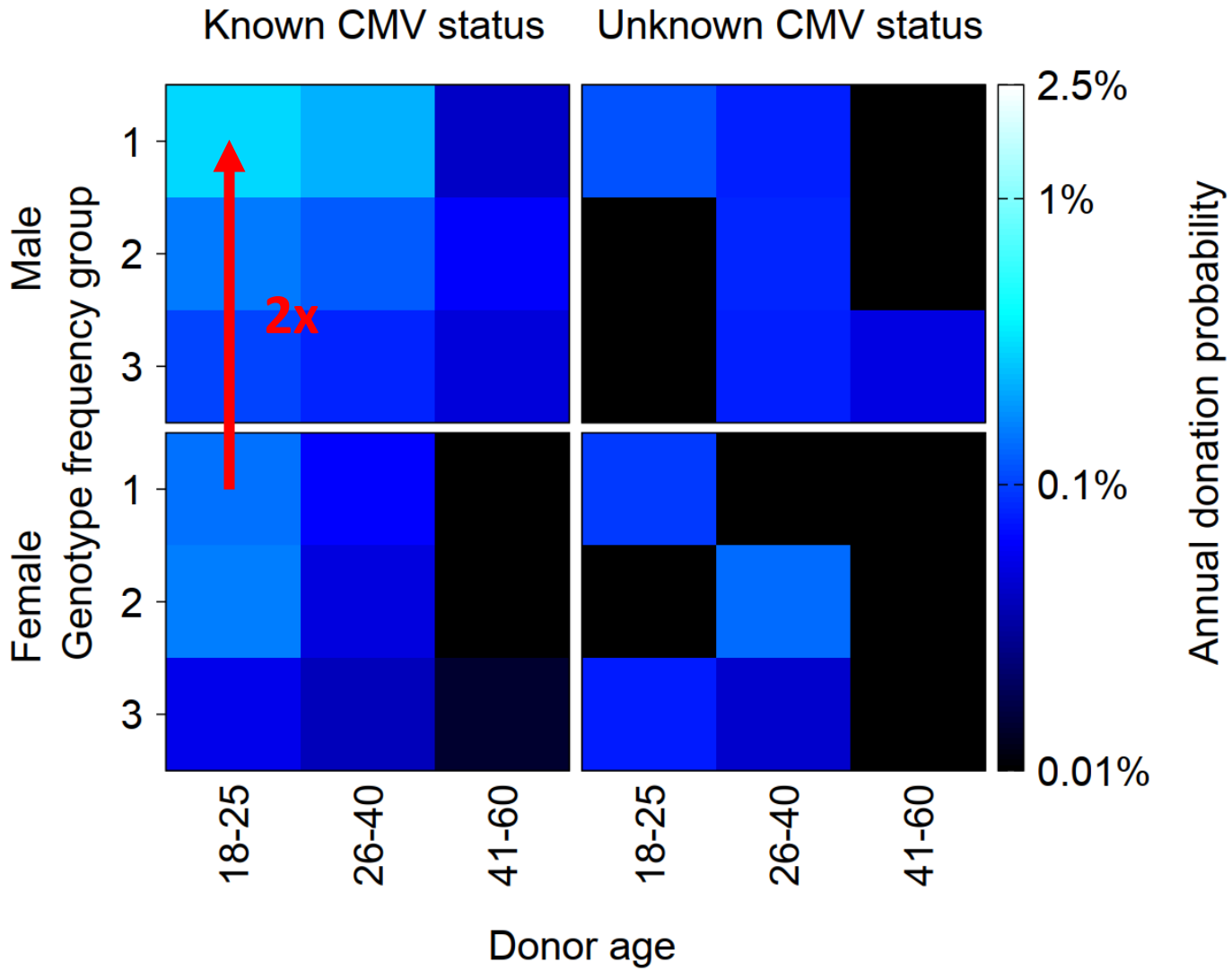


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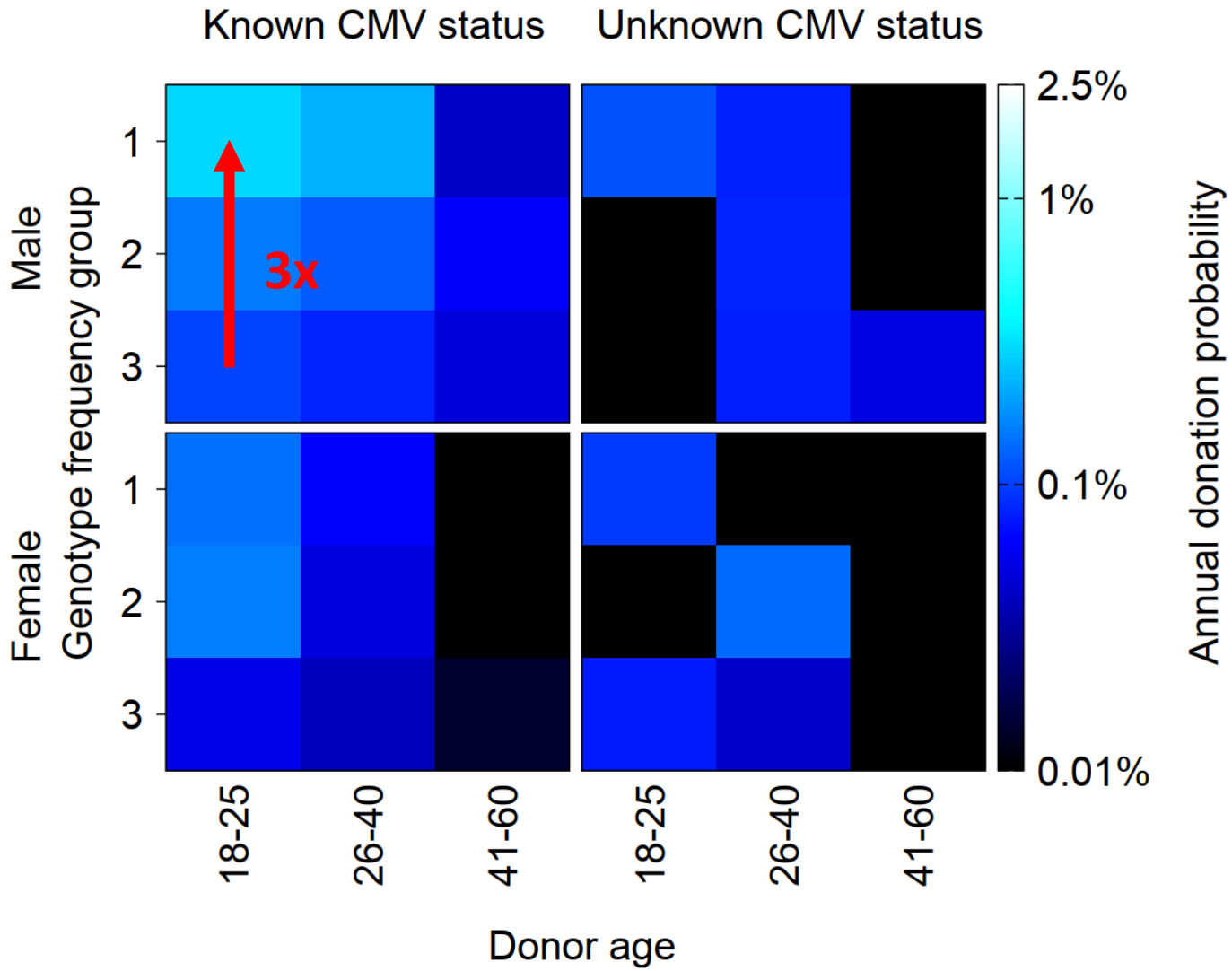


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Focus your donor recruitment efforts on young male donors

- Less important in populations with few donors so far

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Determine CMV status of new donors at recruitment

*The Journal of Infectious Diseases*

MAJOR ARTICLE

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**Geoffrey A. Behrens,[1] Michael Brehm,[1] Rita Groß,[1] Jana Heider,[1] Jürgen Sauter,[2] Daniel M. Baier,[2] Tatjana Wehde,[3] Santina Castriciano,[4] Alexander H. Schmidt,[1,2] and Vinzenz Lange[1]**

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IDSA Infectious Diseases Society of America · hivma hiv medicine association · OXFORD

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Transplant Immunology 75 (2022) 101729

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Brief communication

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Do these results provide guidance on the question of the appropriate upper age limit for donor recruitment?

- Quite obvious that donors >30 years will not generate a positive contribution margin
- The relatively small ADP differences by age in rare genotypes or in Chile indicate the value of older donors, especially in difficult searches
- There is no right or wrong here, each organization must assess which factor it weights higher according to its specific circumstances

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# Some more thoughts on the role of older donors

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Volume 143, Issue 24, 13 June 2024, Pages 2534-2543

TRANSPLANTATION

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Jaime Sanz [1], Myriam Labopin [2], Goda Choi [3], Alexander Kulagin [4], Jacopo Peccatori [5], Jan Vydra [6], Péter Reményi [7], Jurjen Versluis [8], Montserrat Rovira [9], Didier Blaise [10], Hélène Labussière-Wallet [11], Juan Montoro [1], Simona Sica [12], Ellen Meijer [13], Maija Itälä-Remes [14], Nicolaas Schaap [15], Claude Eric Bulabois [16], Simona Piemontese [5], Mohamad Mohty [17], Fabio Ciceri [5 18]

### Key Points

- One allele mismatch did not influence UD transplant outcomes using PTCy.
- Donor age <30 vs ≥30 years should supersede 10/10 vs 9/10 HLA-matching in the selection of unrelated donor for HSCT with PTCy for AML.

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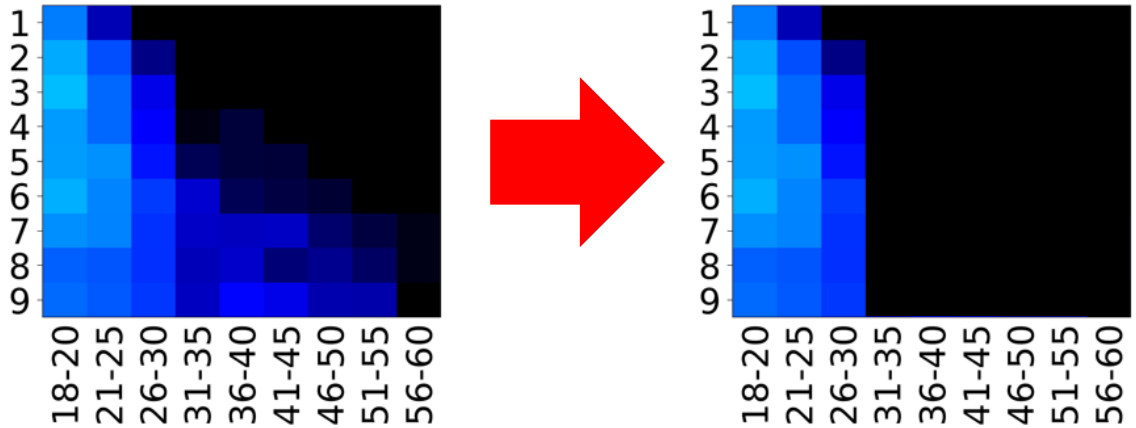
If this view prevails, the following might happen



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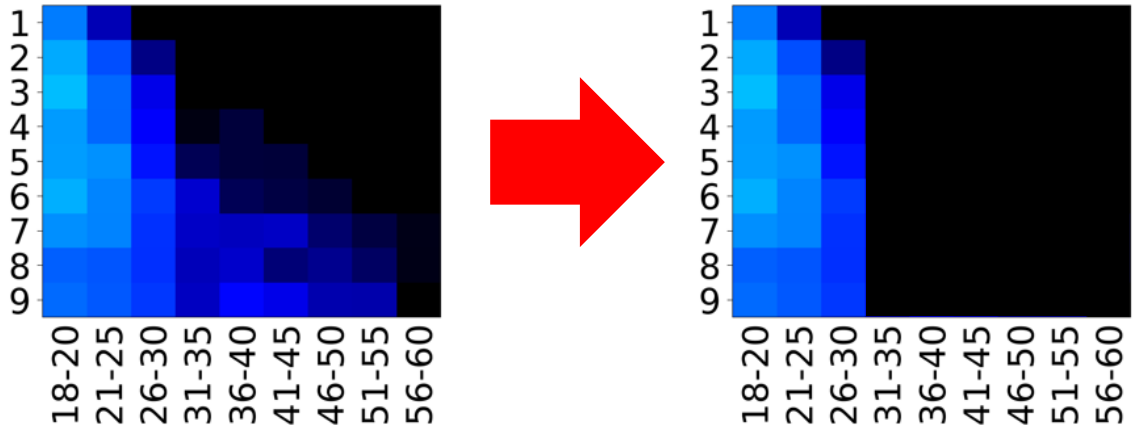



"But you have to admit, then it really doesn't make sense anymore to recruit older donors" – "Hm, possibly, but maybe it still does some good..."

# Some more thoughts on the role of older donors

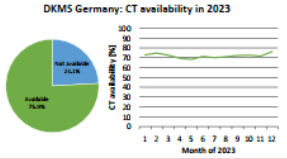
## Donor availability at CT: the parental factor

Jürgen Sauter[1], Julia Stolze[2], Thilo Mengling[1], Deborah Buk[2], Elke Neujahr[1,2], Alexander H. Schmidt[1]

[1] DKMS Group, Tübingen, Germany
[2] DKMS Donor Center Germany, Tübingen, Germany

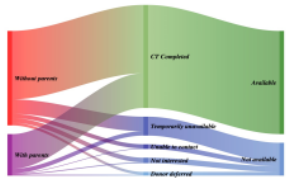
### Background

After registration as a potential unrelated stem cell donor, a confirmatory typing (CT) request, also referred to as "Verification typing" (VT), is often a donor's next crucial step toward stem cell collection.
Consequently, donor availability at this stage is of paramount importance for both, patient therapy planning as well as registry operations.
In general, availability is influenced by a multitude of factors, such as donors' sex, age and health, ethnicity, time since recruitment, recruitment channel, registry country and others.

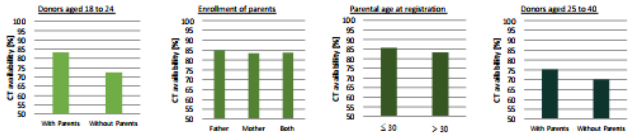



### Methods

Based on 2023 data, we investigated whether donors at DKMS Germany, whose parents are also registered donors, differ in availability when called for CT from donors without registered parents.
Our hypothesis, driven by anecdotal evidence from donor center practice, was that registered parents would have a positive impact on the CT availability of their children.
We assumed a parent-child relationship given identical addresses, identical surnames, and an age difference of at least 20 years. We did not use HLA information for confirmation.




### Results




### Conclusion

Our results suggest that parents
- play a significant role in their children's decision making at CT level
- influence them towards a positive decision if they are registered donors themselves.

As parental age at recruitment does not seem to influence the impact on their children's CT availability, this would be an argument against a too low upper age limit for donor recruitment.
The results of this explorative study should be confirmed by a multivariate analysis that includes other potential factors influencing CT availability.

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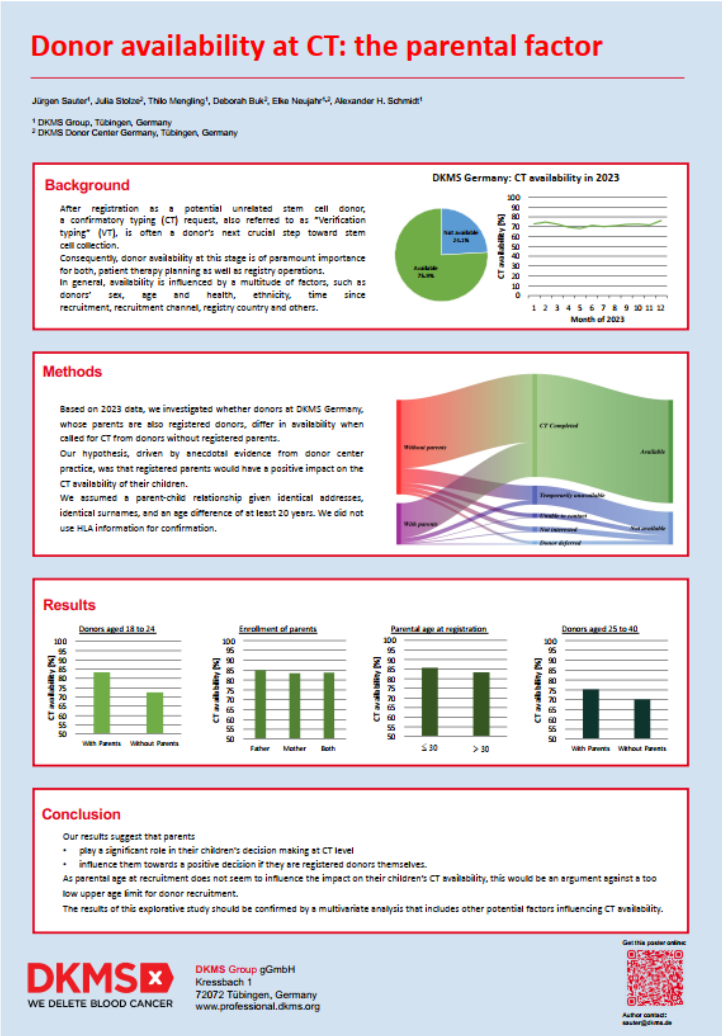
# Some more thoughts on the role of older donors



## Donor availability at CT: the parental factor

Jürgen Sauter[1], Julia Stolze[2], Thilo Mengling[1], Deborah Buk[2], Elke Neujahr[1,2], Alexander H. Schmidt[1]

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### Background

After registration as a potential unrelated stem cell donor, a confirmatory typing (CT) request, also referred to as "Verification typing" (VT), is often a donor's next crucial step toward stem cell collection.
Consequently, donor availability at this stage is of paramount importance for both, patient therapy planning as well as registry operations.
In general, availability is influenced by a multitude of factors, such as donors' sex, age and health, ethnicity, time since recruitment, recruitment channel, registry country and others.

DKMS Germany: CT availability in 2023

Not available 25.3%
Available 74.8%

CT availability [%]
Month of 2023

### Methods

Based on 2023 data, we investigated whether donors at DKMS Germany, whose parents are also registered donors, differ in availability when called for CT from donors without registered parents.
Our hypothesis, driven by anecdotal evidence from donor center practice, was that registered parents would have a positive impact on the CT availability of their children.
We assumed a parent-child relationship given identical addresses, identical surnames, and an age difference of at least 20 years. We did not use HLA information for confirmation.

Without parents
With parents
CT Completed
Available
Temporarily unavailable
Unable to contact
Not interested
Donor deferred
Not available

### Results

Donors aged 18 to 24
Enrollment of parents
Parental age at registration
Donors aged 25 to 40

CT availability [%]
With Parents
Without Parents
Father
Mother
Both
≤ 30
> 30

### Conclusion

Our results suggest that parents
- play a significant role in their children's decision making at CT level
- influence them towards a positive decision if they are registered donors themselves.

As parental age at recruitment does not seem to influence the impact on their children's CT availability, this would be an argument against a too low upper age limit for donor recruitment.
The results of this explorative study should be confirmed by a multivariate analysis that includes other potential factors influencing CT availability.

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Poster by Jürgen Sauter on associations between parents registered as stem cell donors and the CT availability of their children

- Preliminary, but interesting data
- In the future, perhaps the greatest added value of registered older donors might be to be role models for their 18-to-20-year-old children

# Thank You!

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