ASSESSMENT OF PERSISTENT ORGANIC POLLUTANTS (POPs) IN SERUM FROM GUINEA-BISSAU, WESTERN AFRICA

– A TIME TREND STUDY

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Background

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Human exposure to POPs

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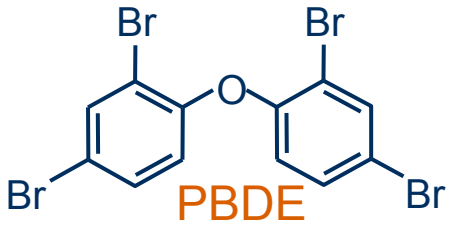
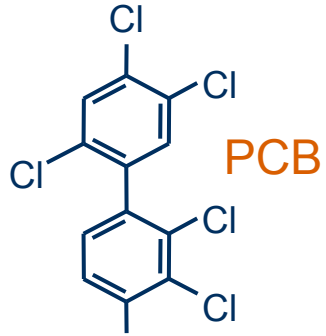
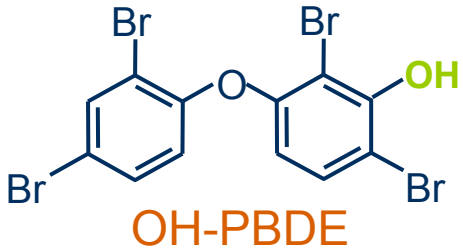
Objectives

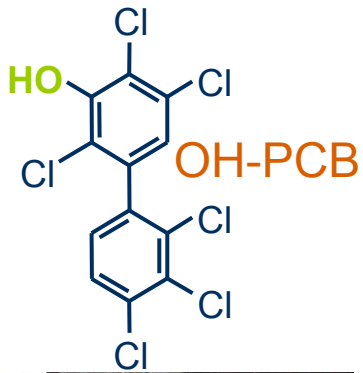
- Assess exposure of POPs in humans from three countries in transition; Nicaragua, Guinea-Bissau and Bangladesh

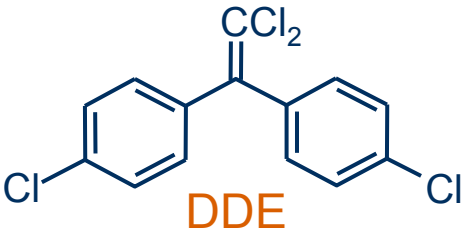
- Special focus on children that are working and sometimes living at dump sites











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Introduction to Guinea-Bissau

Objectives:

- Investigate human exposure POPs in a developing country in Africa
- Evaluate the change of concentration of POPs over time

Guinea-Bissau:

- Situated on the west coast of Africa
- One of the ten poorest countries in the world
- Endemic malaria

Samples

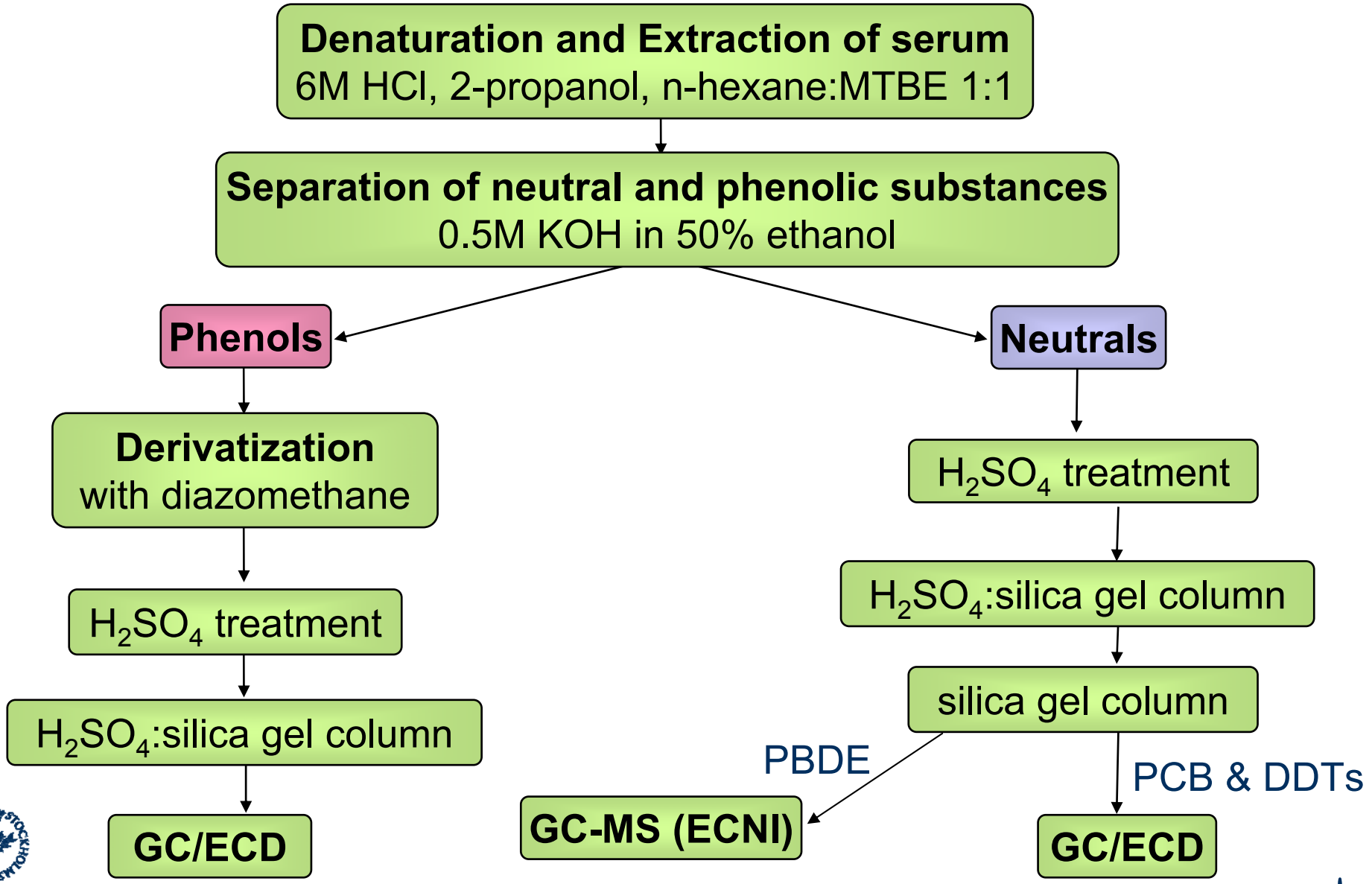
- Serum samples from an open cohort of police officers participating in a HIV study.

- 34 HIV negative male police officers sampled at 4-5 occasions between 1990 and 2007

- Six pooled serum samples were formed. All pools were sampled at 4-5 time periods (1990-91, 1993-95, 1997-99, 2001-03 and 2005-07)

The same individuals have been followed for 17 years!

Method



Hovander *et al* 2000

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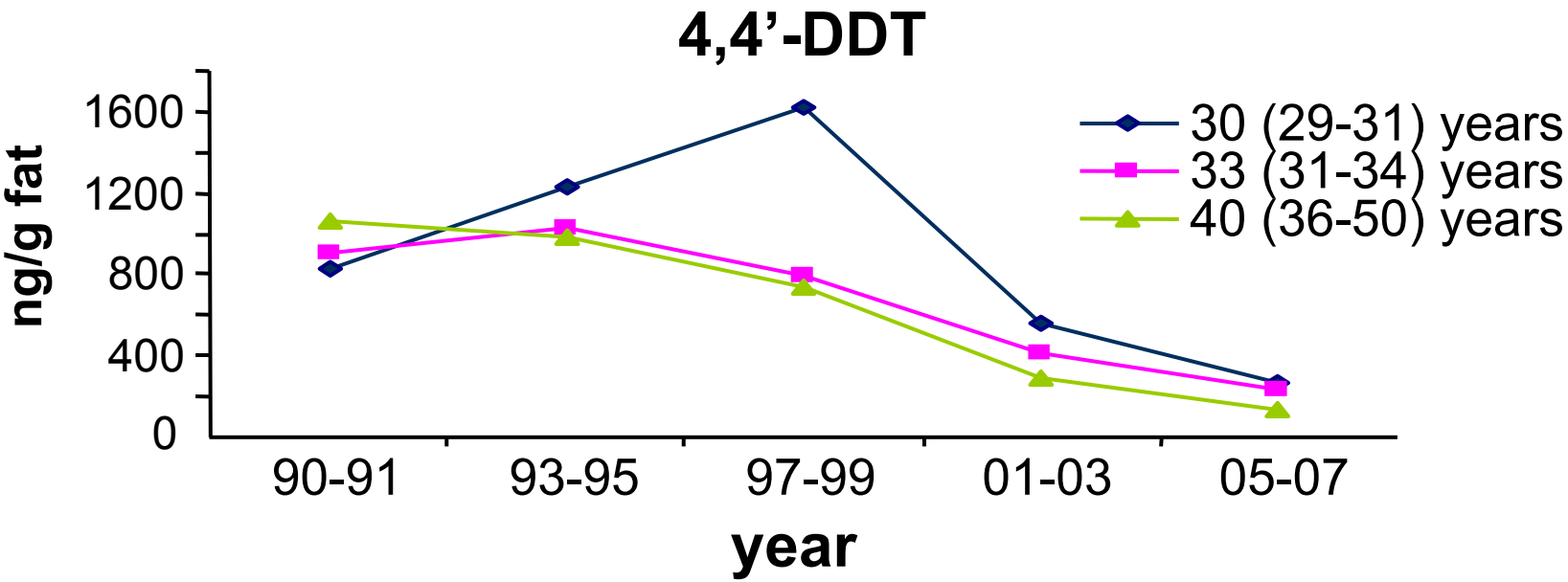
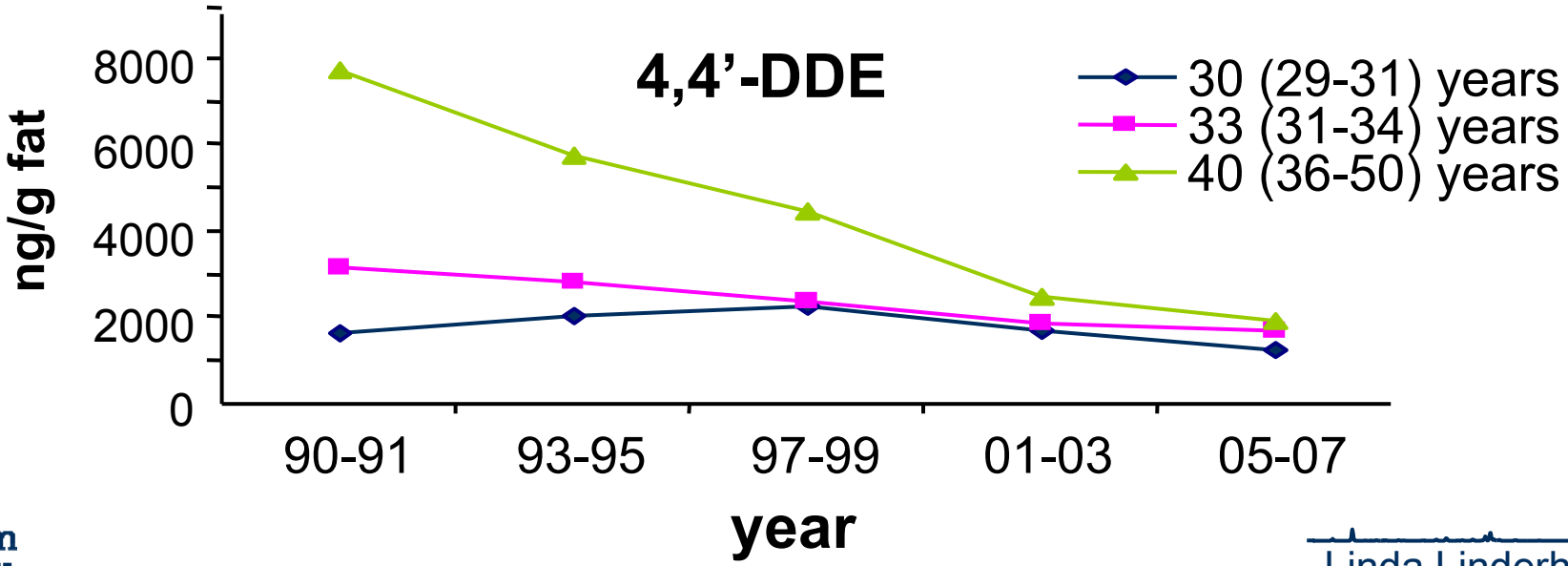
Results DDTs





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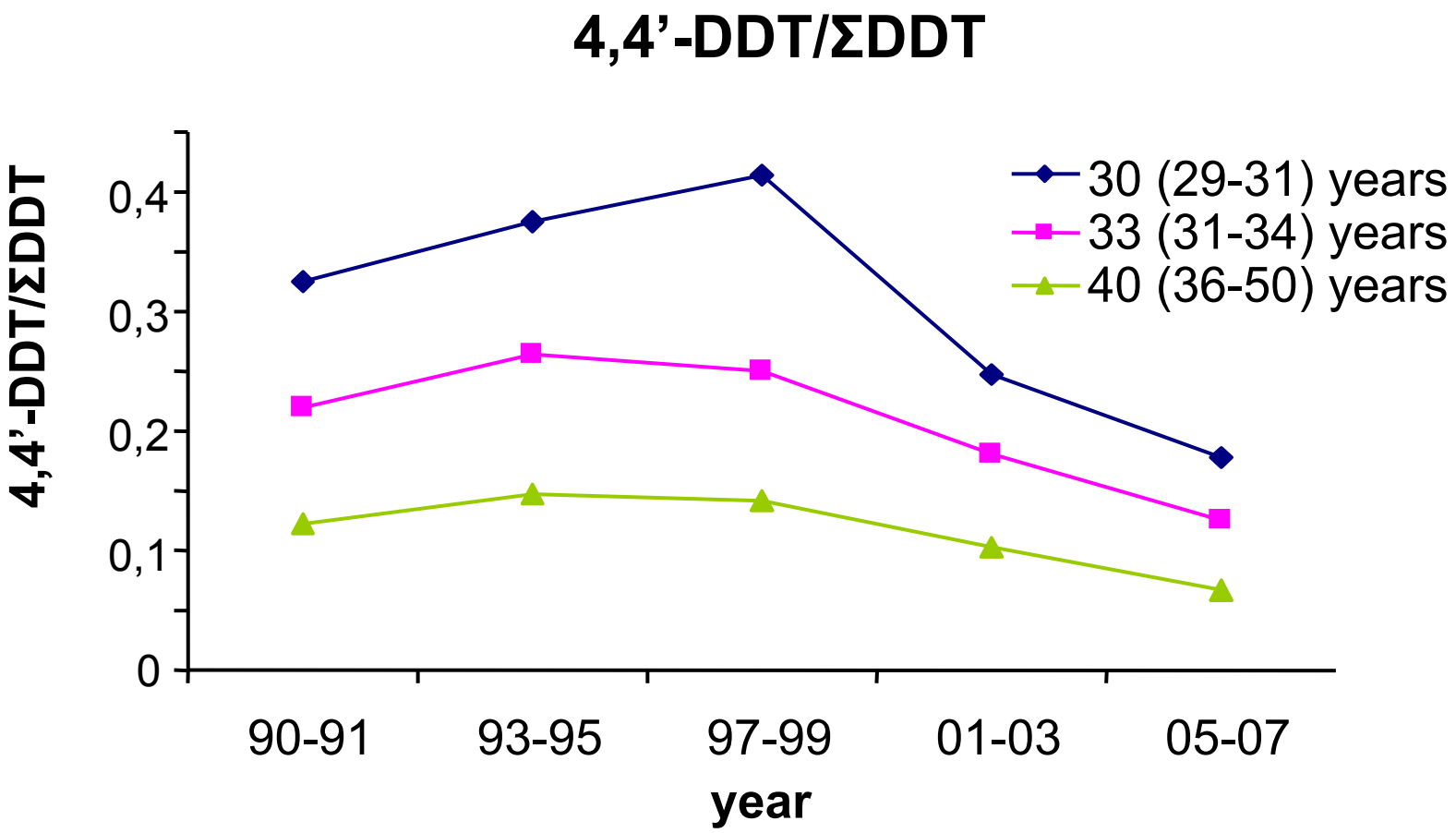
Results DDTs



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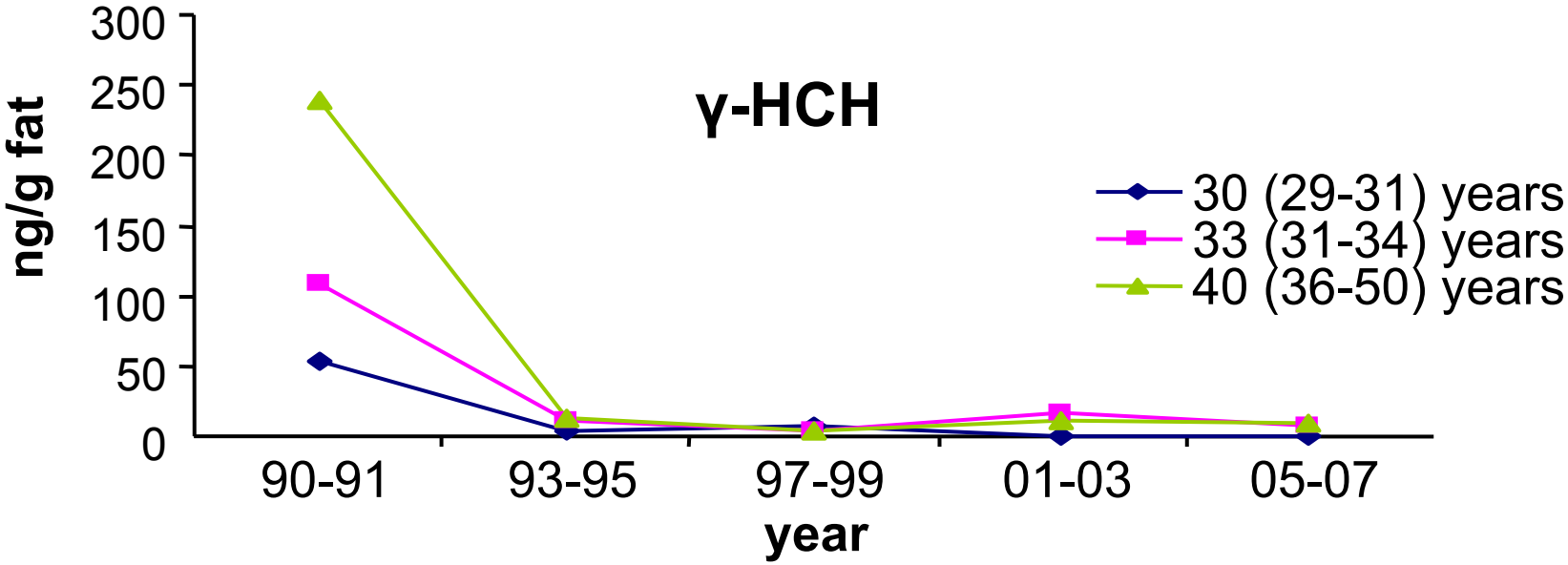
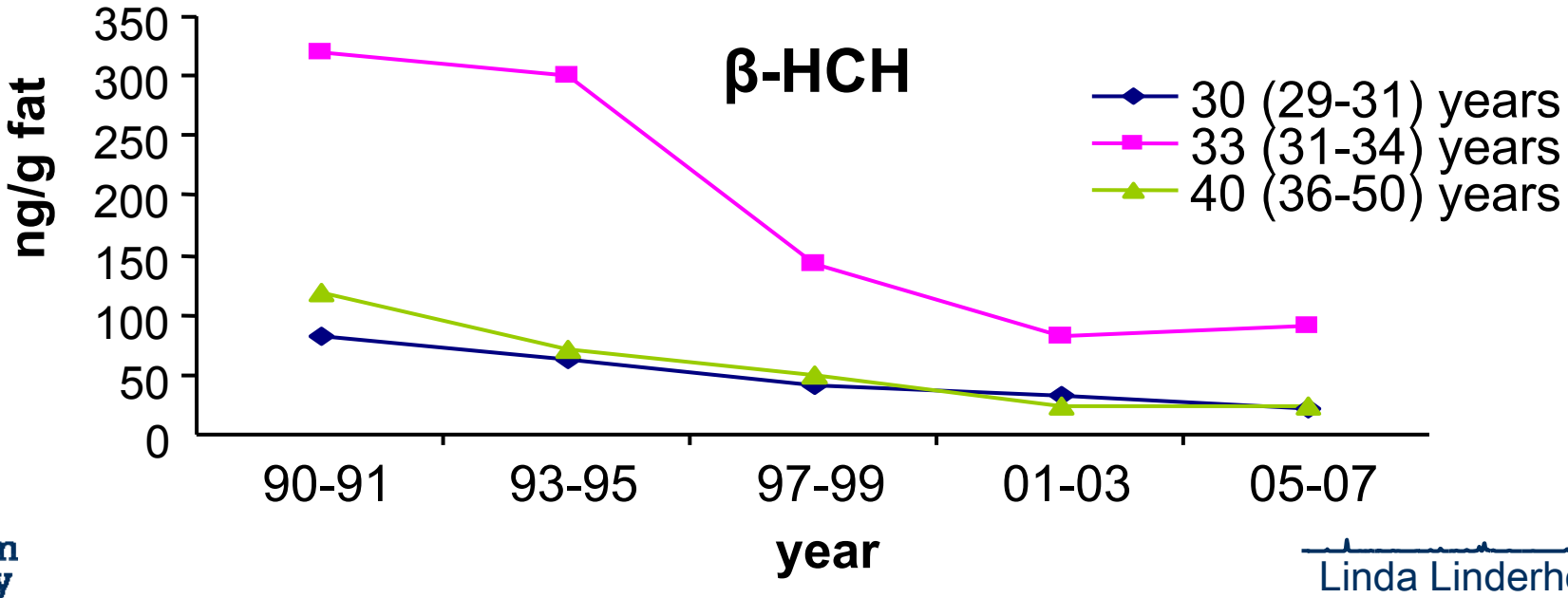
Results HCHs





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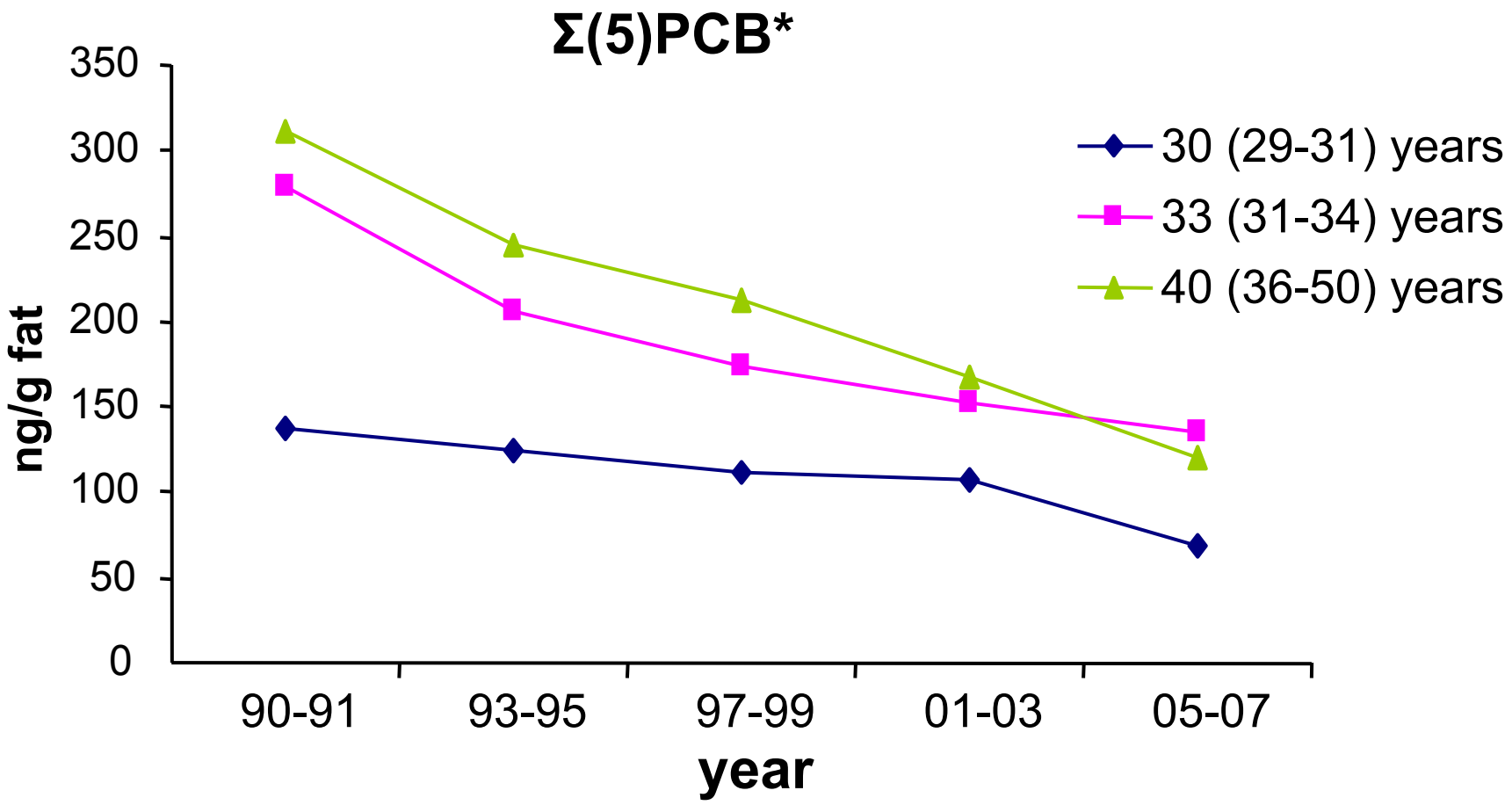
Results PCBs



*Σ(5)PCB = CB-153+CB-180+CB-138+CB-170+CB-187

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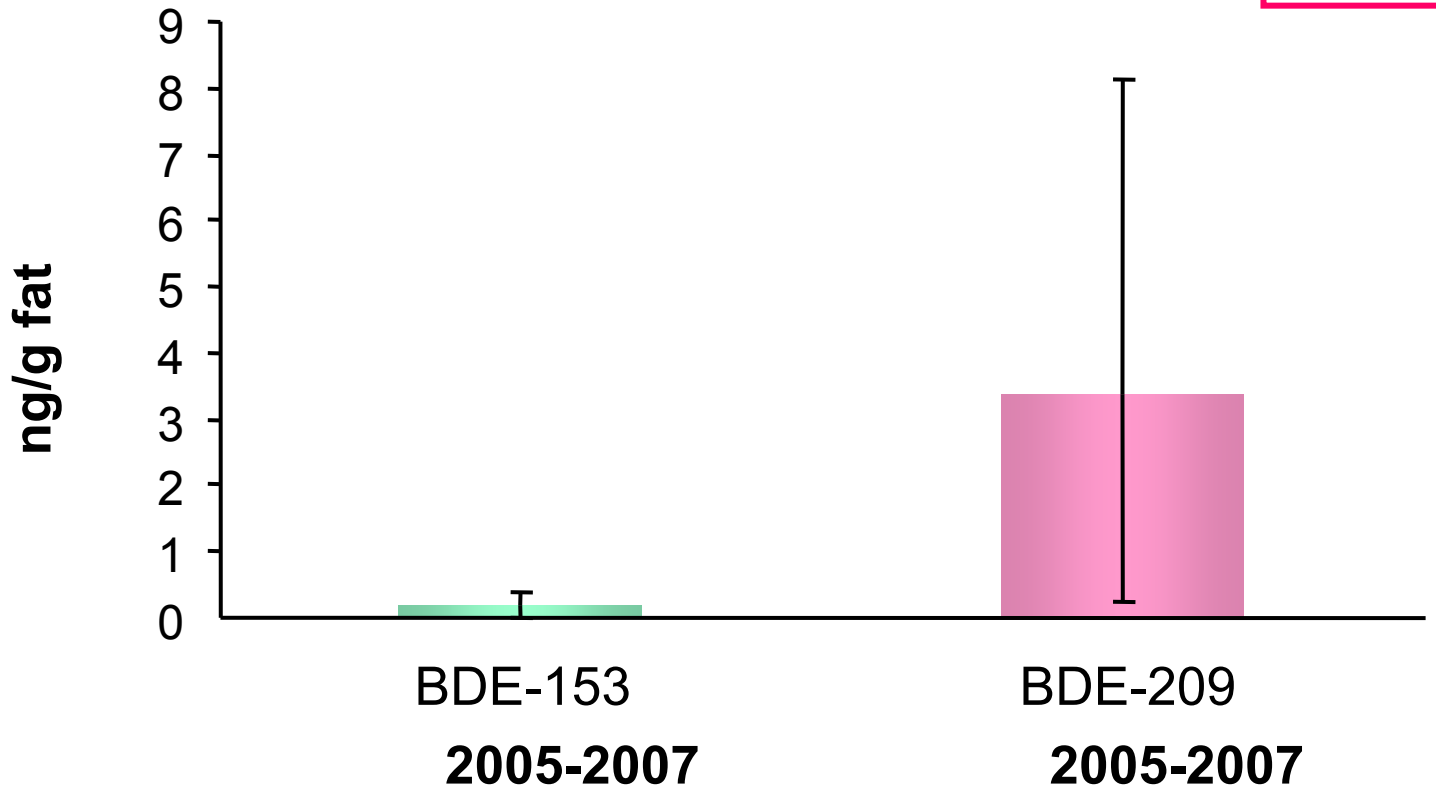
Results PBDEs

BDE 47 < LOQ



No significant time trends

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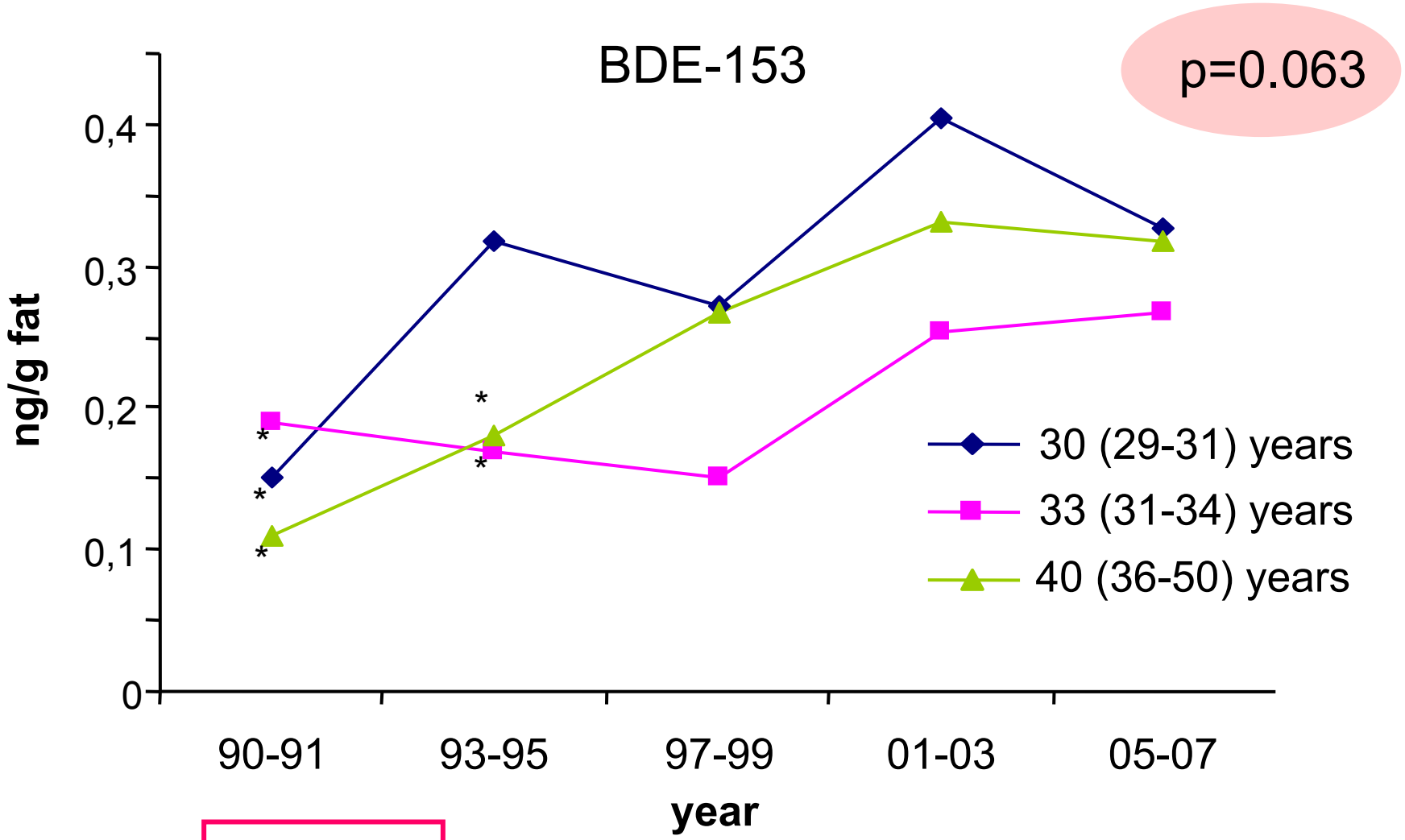
Results PBDEs



* ½ LOQ

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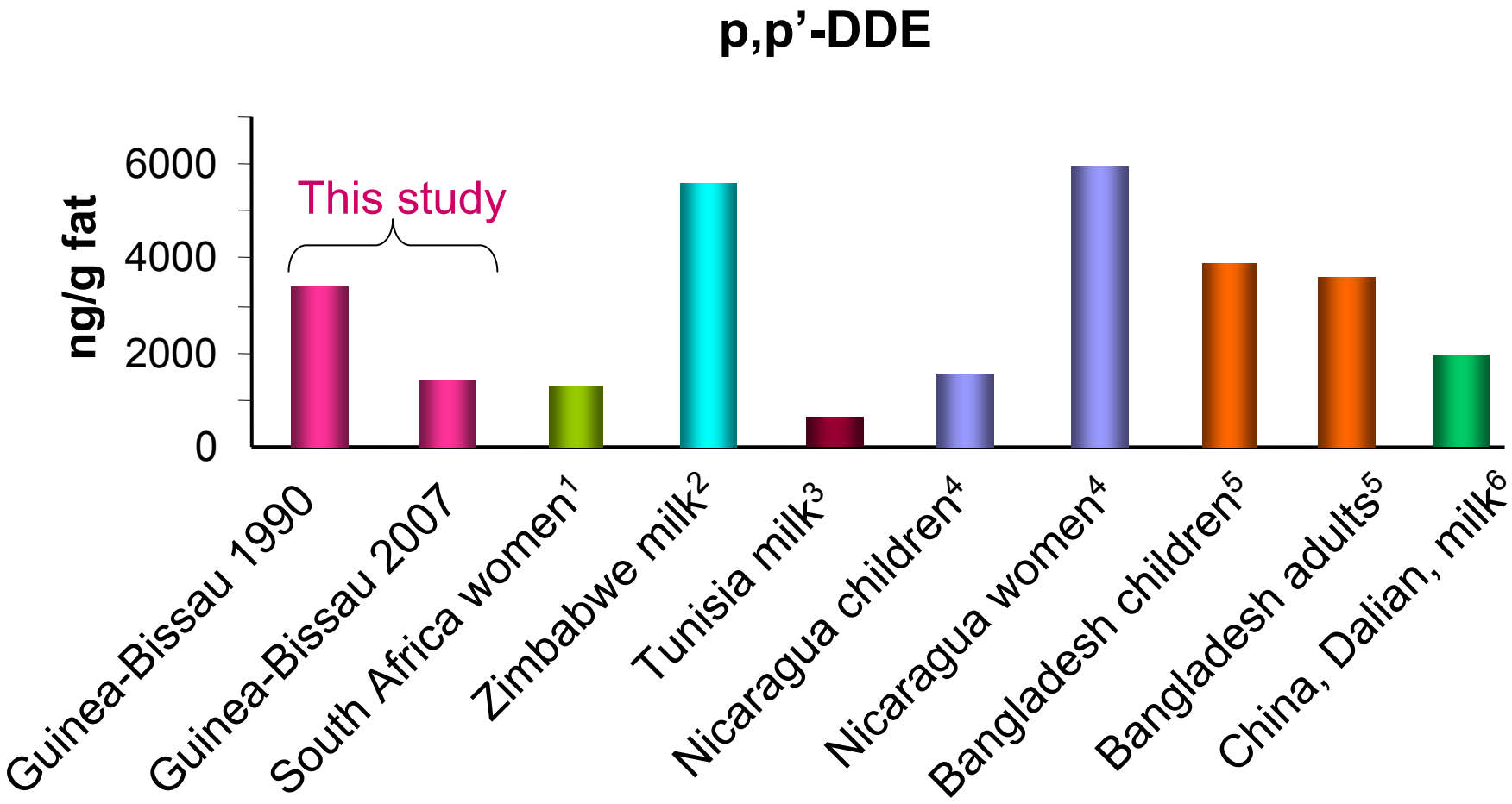
Half lives/Doubling time

	Yearly change (years)	95% CI	P-value	Half life (years)
4,4´-DDT	-39	-61, -18	0.001	11
4,4´-DDE	-140	-200, -69	<0.001	13
4,4´-DDD	-1.8	-2.9, -0.66	0.007	10
β-HCH	-9.4	-13, -5.6	<0.001	9
CB-138	-2.1	-2.9, -1.3	<0.001	12
CB-153	-2.2	-2.7, -1.8	<0.001	14
CB-170	-0.62	-0.86, -0.37	<0.001	14
CB-180	-1.8	-2.7, -0.98	<0.001	16
CB-187	-0.49	-0.68, -0.31	<0.001	15
Σ(5)PCB	-8.1	-11, -5.5	<0.001	14
				Doubling time (years)
BDE-153	0.0071	0.0039, 0.010	0.001	10
BDE-209	0.028	-0.099, 0.15	0.62	38

Comparison DDE



[1]Röllin *et al* OHC 2008
[2]Chikuni *et al* 1997
[3]Ennaceur *et al* 2008
[4]Cuadra *et al* 2006
[5]Mamun *et al* OHC 2007
[6]Kunisue *et al* 2004

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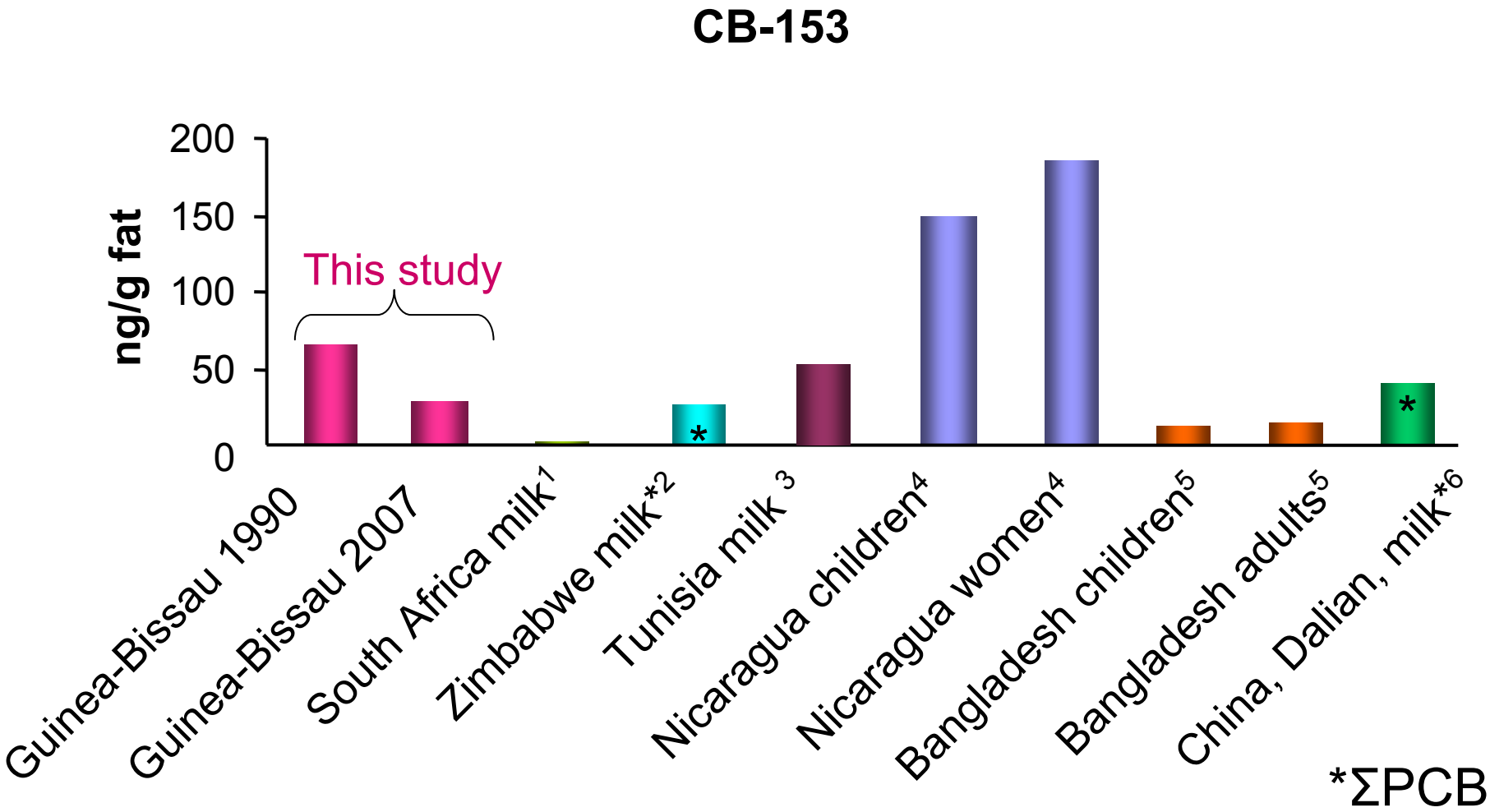
Comparison PCB



[1]Darnerud *et al* OHC 2006
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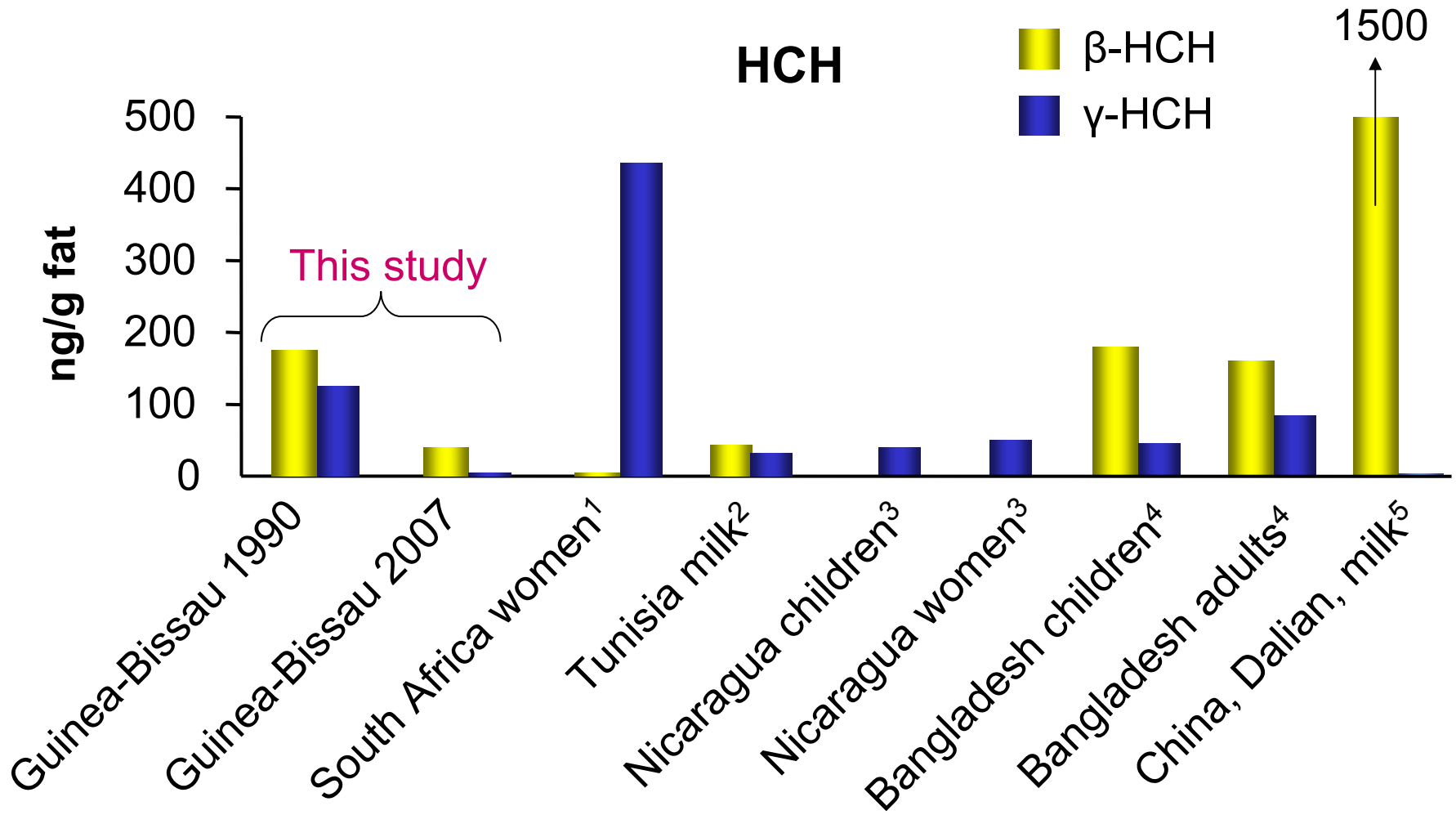
Comparison HCH



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Conclusion

- Unique study!
- Decreasing trends over time for most of the substances studied
- DDE were the POP found at the highest concentration followed by DDT

Conclusion

- A distinct decrease of γ-HCH in the early 90's
- Decreasing PCB levels
- BDE-209 was the major BDE congener

PBDEs showed no significant time trends.

Thank you!!!

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