

## Assessment of oxidative damage in red blood cells in seabirds from Argentina

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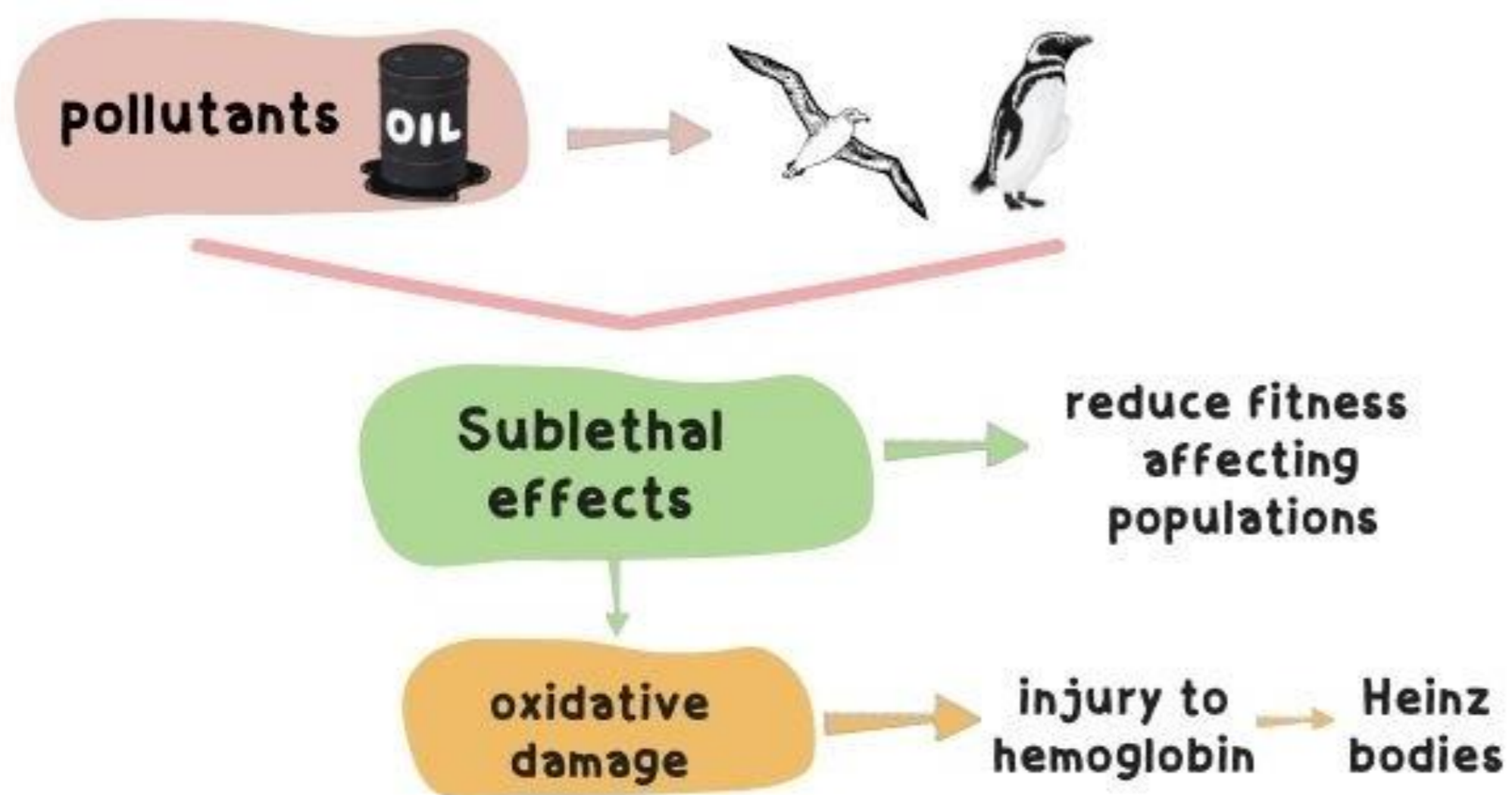


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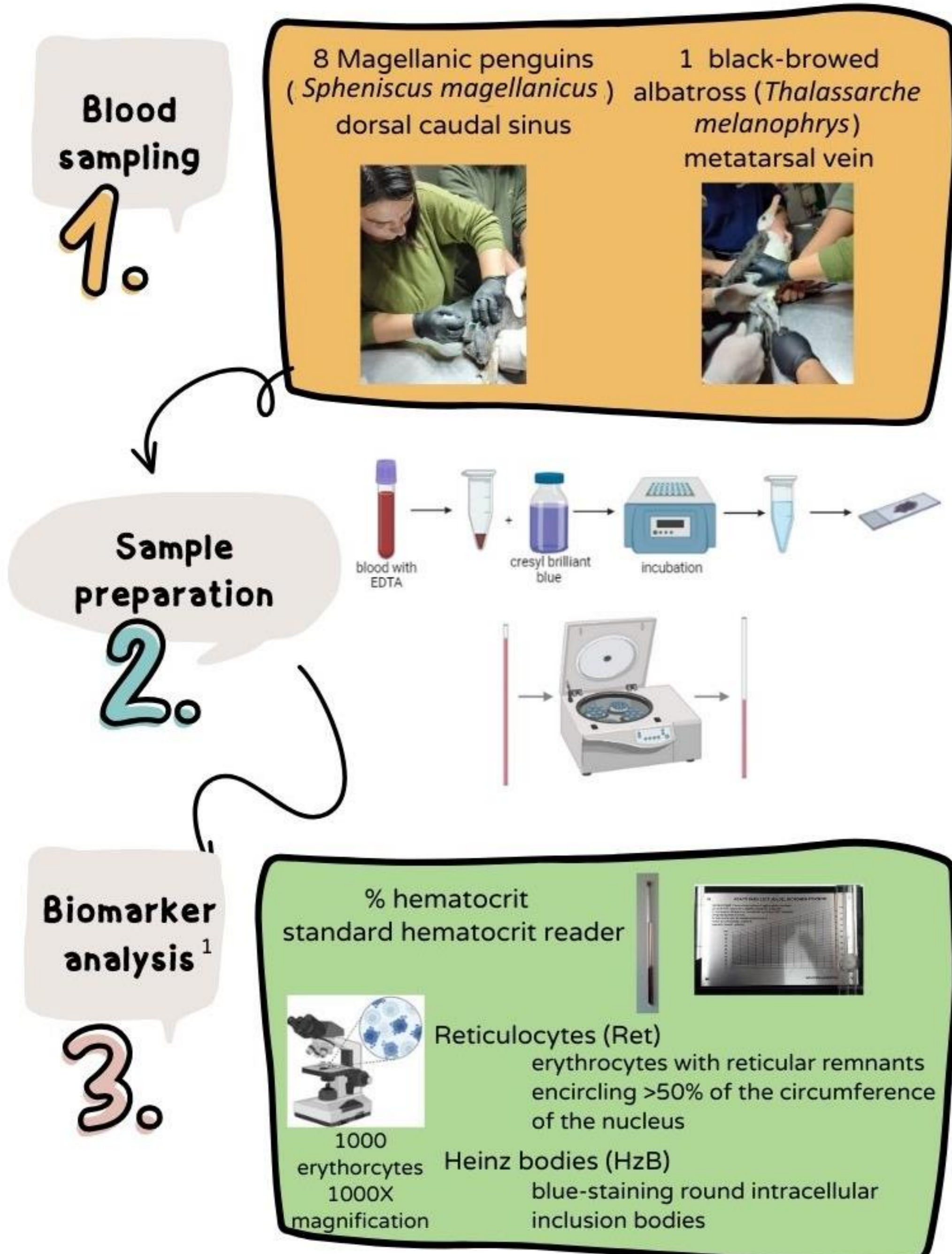
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### INTRODUCTION & AIM



The aim was to determine hematological biomarkers of oxidative damage in seabirds to evaluate possible effects on the birds' health.

### METHOD

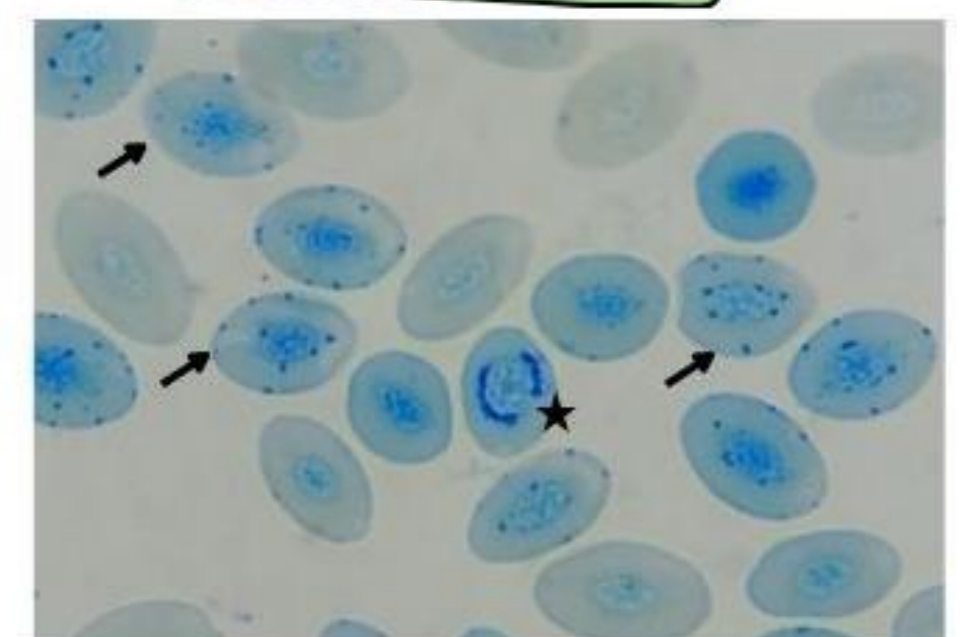


### RESULTS & DISCUSSION

#### Hematocrit and reitculocytes

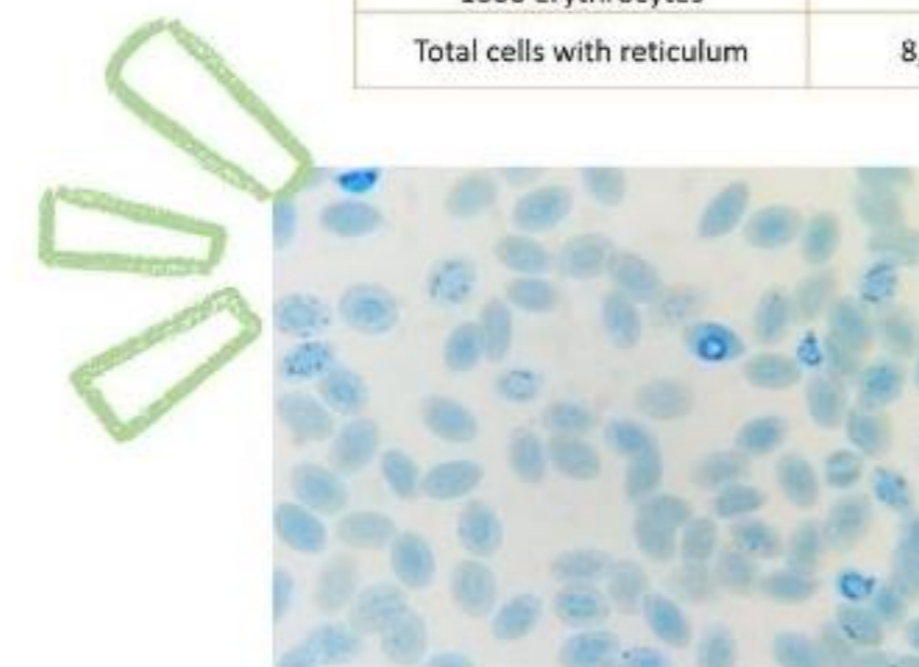
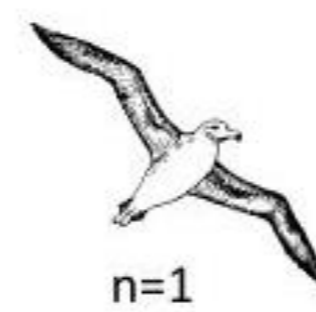
Variable	Mean ± SD	Min -Max
Hematocrit (%)	36.5±3.27	33-41
Reticulocyte / 1000 erythrocytes	17.17±8.42	8-30
Percentage reticulocytes	1.72±0.84	0.8-3
Cells with disperse reticulum / 1000 erythrocytes	87.83±46.43	30-155
Total cells with reticulum	105±50.58	45-178

within the normal range for birds<sup>2,3,4,5</sup>



★ reticulocyte  
→ erythrocytes with same grade of reticulum (punctate or aggregates distributed diffusely within the cytoplasm)

Variable	Value
Hematocrit (%)	39
Reticulocyte / 1000 erythrocytes	2
Percentage reticulocytes (%)	61
Cells with disperse reticulum / 1000 erythrocytes	81
Total cells with reticulum	8,1



A Magellanic penguin diagnosed with malaria showed the highest levels of reticulocytes, consistent with regenerative anemia<sup>6</sup>

#### Heinz Bodies



birds with sign of fuel on their feathers

were not observed in any of the birds

in agreement with other studies in birds values of Heinz bodies were zero or close to this value<sup>7,8</sup>

### CONCLUSION

- First attempt to evaluate reticulocytes and Heinz bodies in Magellanic penguins and black-browed albatross.
- Heinz bodies were not found in red blood cells but the information presented allows establishing baselines for the evaluation of future impacts associated with human activity

### REFERENCES / GRANTS

1. Fallon et al., 2013. Environ. Toxicol Chem 32:401-405.
2. Campbell and Ellis, 2013. Avian and Exotic Animal Hematology and Cytology.
3. Mazzaro et al., 2013. J. Avian Med Surg 27:285-293.
4. McKeown, 2007. The North American Veterinary Conference: 89-92.
5. Riley et al., 2001. J Clin Lab Anal 15:267-294.
6. Schoenle et al., 2017. J Anim Ecol 86:1483-1496.
7. Fallon et al., 2021 Environ Pollut 290:118026.
8. Newman et al., 1999. Comp Haematol Int 9:60-67.

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