

# Opportunities to Reduce Animal Use in the Carcinogenicity Evaluation of New Drugs

A 5-minute case study in counting animals

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# Counting the animals used:

- Suggests opportunities to reduce animal use
- Estimates the potential for reductions (low-hanging fruit)
- Measures progress toward replacement

31,258 rats 52 x 104 wk 601.1 rats/study 400?

24,504 mice 33 x 104 wk 742.5 mice/study 400?

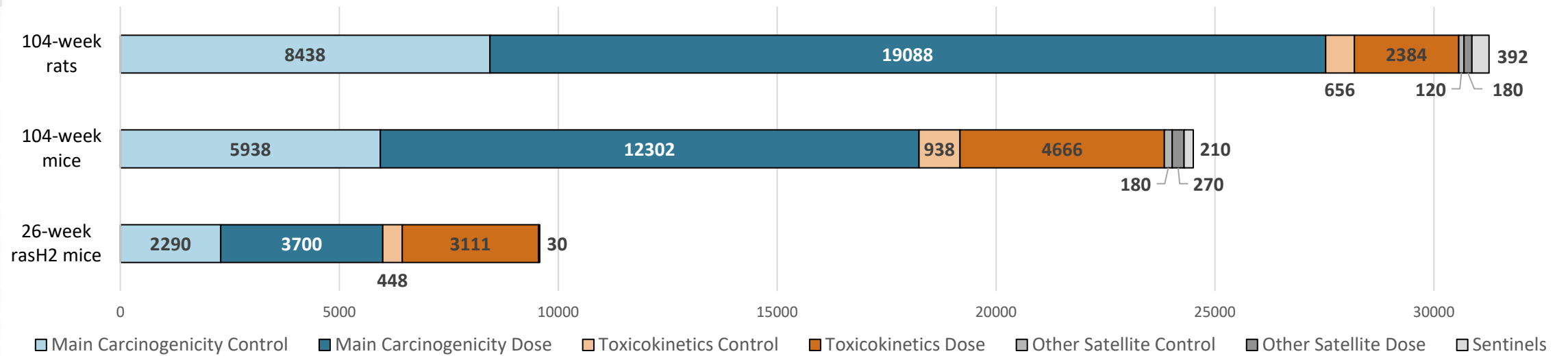
9,579 rasH2 24 x 26 wk 399.1 rasH2/study 210?

65,341 animals 109 studies

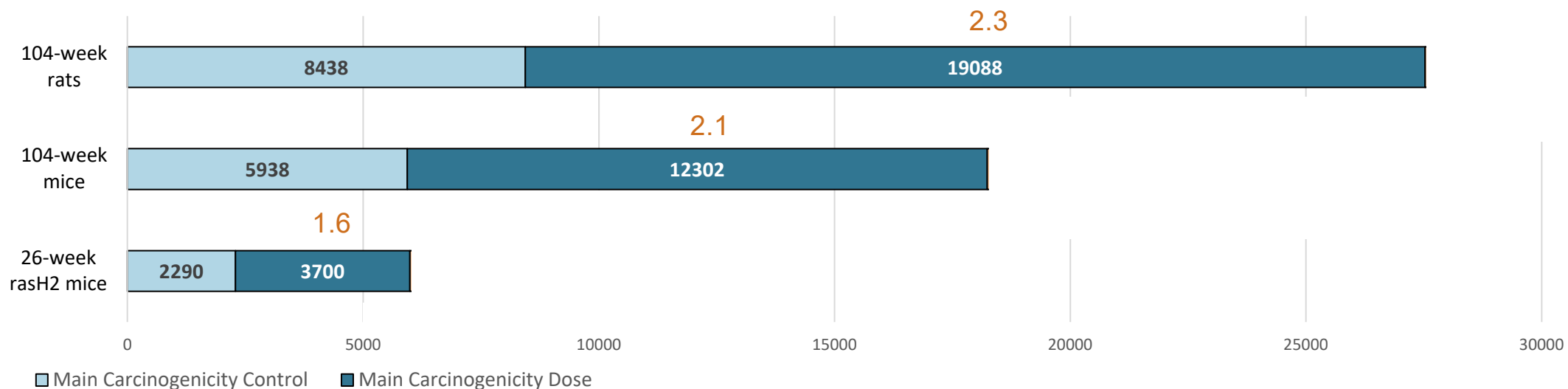
*“..it is suggested that for each sex there should initially be at least 50 animals per treated group, and one control group of the same number for each sex dosed with the vehicle by the same route.” EMA/CPMP/SWP/2877/00*



## Total Number of Animals Used per Control and Dose Group in Main and Satellite Studies



## Total Number of Animals Used per Control and Dose Group in Main Studies



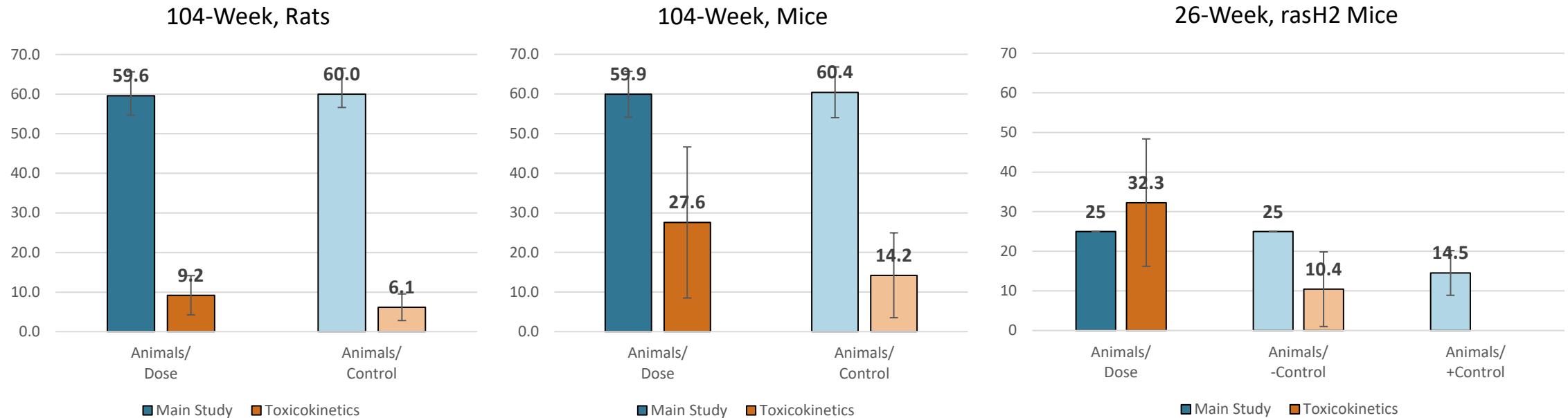
*“..it is suggested that for each sex there should initially be at least 50 animals per treated group, and one control group of the same number for each sex dosed with the vehicle by the same route.” EMA/CPMP/SWP/2877/00*

*“There are two categories of studies with dual control groups. The first category usually consists of studies using an untreated control group and a vehicle control group... The second category includes studies that use two identical control groups...” FDA, 2001. Guidance for Industry: Statistical Aspects of the Design, Analysis, and Interpretation of Chronic Rodent Carcinogenicity Studies of Pharmaceuticals.*

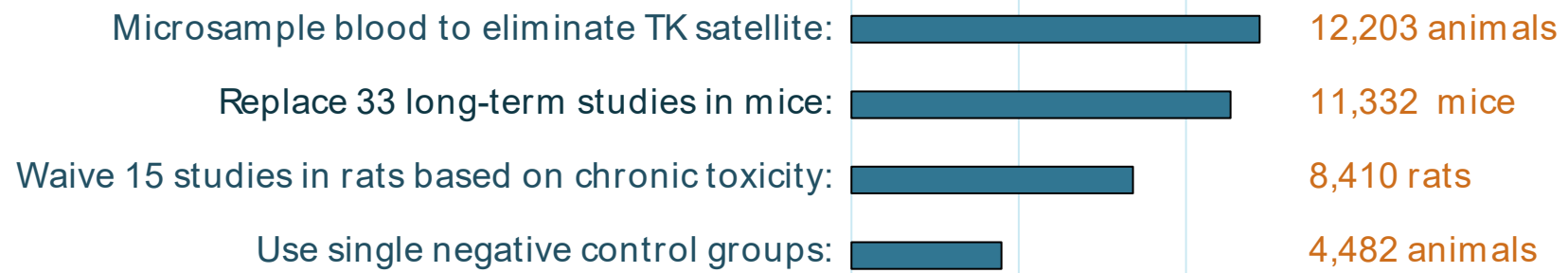
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24,504 mice	33 x 104 wk	742.5 mice/study
<u>9,579 rasH2</u>	<u>24 x 26 wk</u>	399.1 rasH2/study
65,341 animals	109 studies	



## Average Number of Animals Used per Control and Dose Group in Main and Toxicokinetics Studies



- *Microsampling can reduce pain and distress in animals and improve animal welfare (refinement).*







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# Regulatory Toxicology and Pharmacology



Joseph Manuppello, Eryn Slankster-Schmierer, Kristie Sullivan, Elizabeth Baker. Animal Use and Opportunities for Reduction in Carcinogenicity Studies Supporting Approved New Drug Applications in the U.S., 2015-2019. In revision.

Joseph Manuppello, Kristie Sullivan, Elizabeth Baker. Acute toxicity “six-pack” studies supporting approved new drug applications in the U.S., 2015–2018. Volume 114, July 2020.

<https://doi.org/10.1016/j.yrtph.2020.104666>.

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