

Evaluating 3,4,3-LI(1,2-HOPO) as a Decorporation Agent for Gadolinium-Based Contrast Agents

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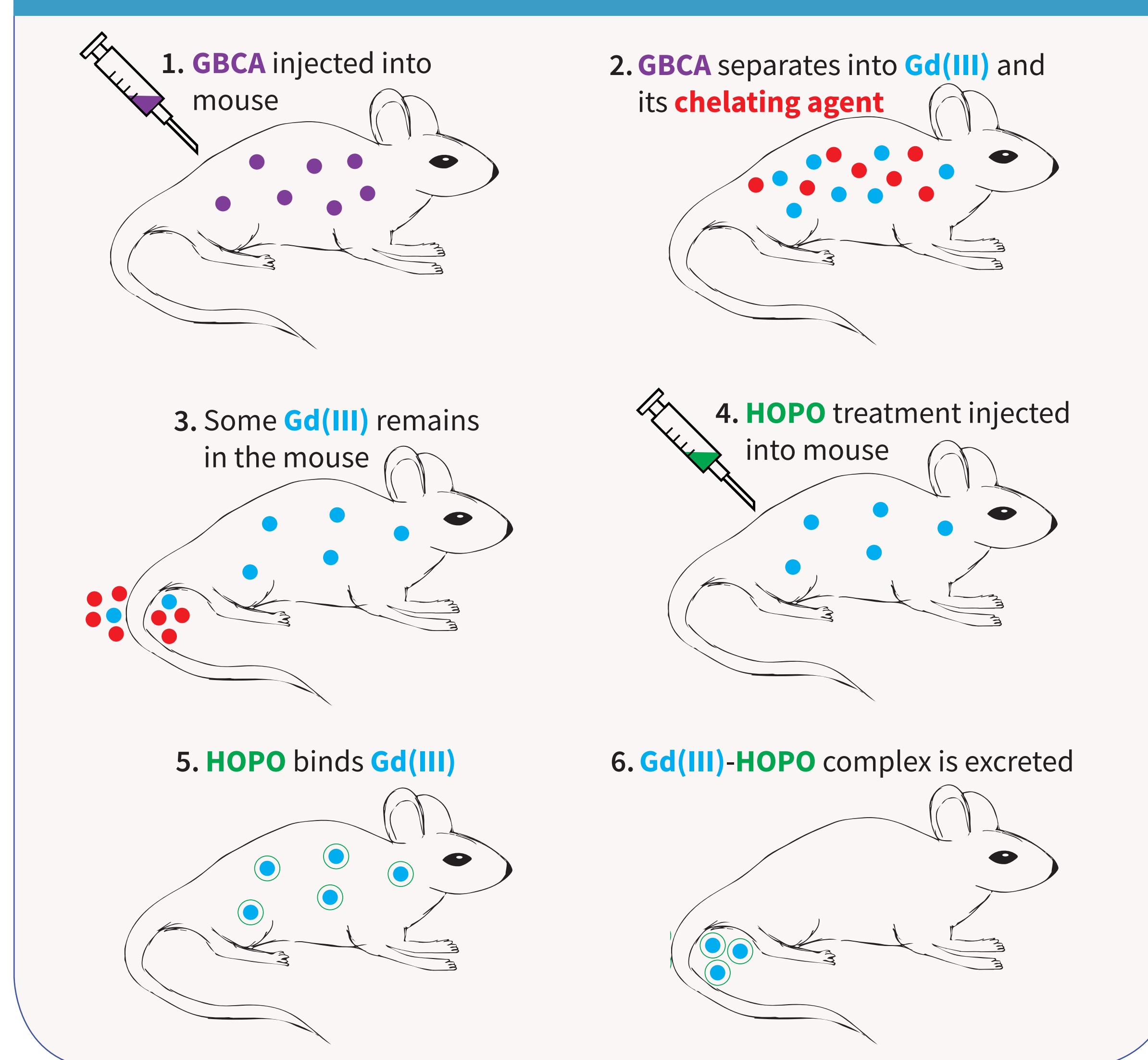
INTRODUCTION

Gadolinium-Based Contrast Agents (GBCAs) are administered before Magnetic Resonance Imaging (MRI) procedures to amplify the contrast between normal and abnormal tissues. These images help radiologists detect life-threatening illnesses¹.

Recent studies suggest that the *in vivo* instability of GBCAs has led to the dissociation of Gd(III) from their chelated complexes². Free Gd(III) can accumulate in patients' brain, liver, kidneys, skin, and bones^{2,3} and potentially damage these organs.

In this study, we evaluated the efficacy of the ligand 3,4,3-LI(1,2-HOPO) (abbreviated "HOPO") in removing gadolinium (Gd) deposited by FDA-approved GBCAs.

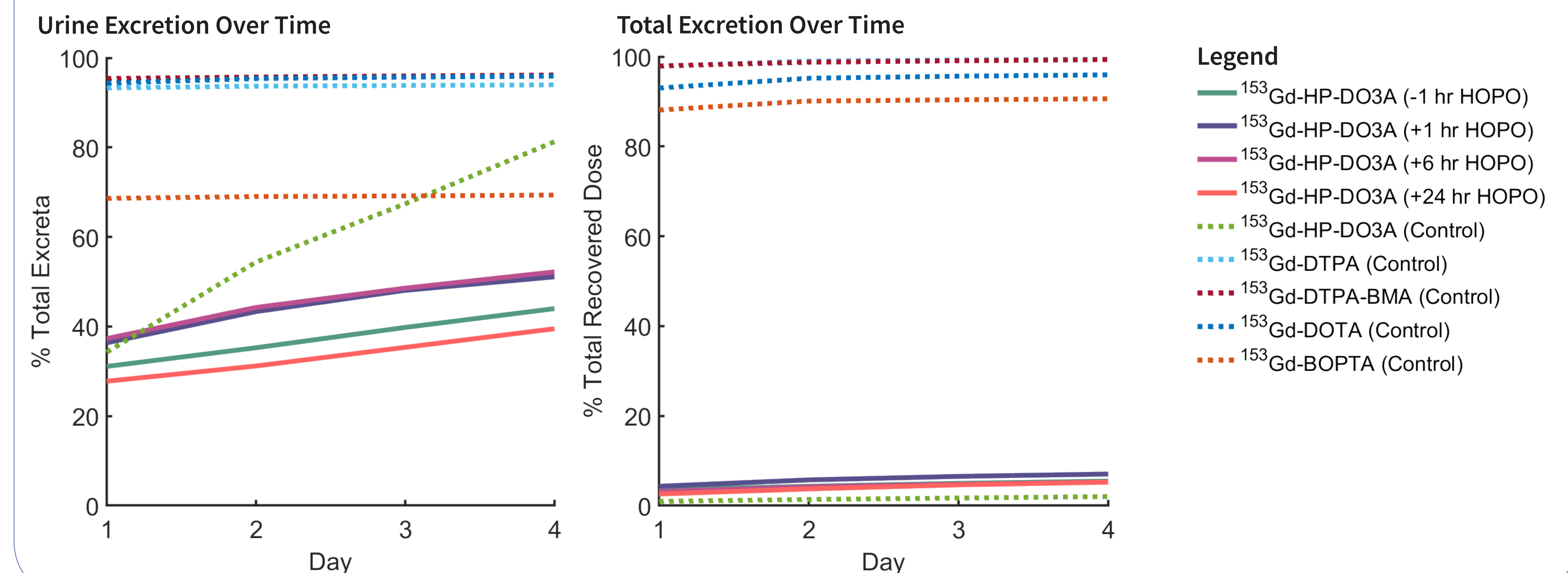
CONCEPT



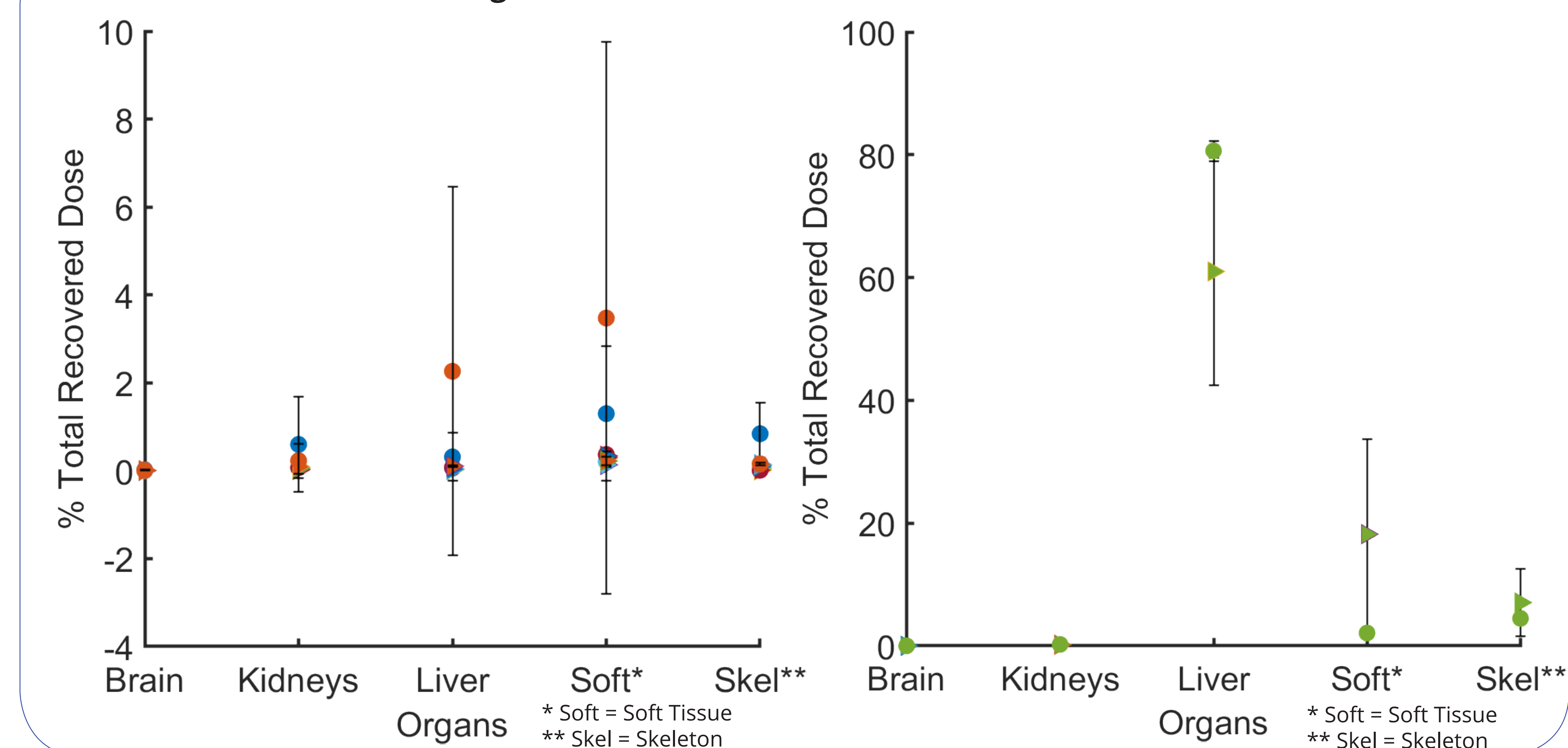
METHODS

- 5 GBCAs
 - ↳ ¹⁵³Gd-DTPA,
 - ¹⁵³Gd-DTPA-BMA,
 - ¹⁵³Gd-DOTA,
 - ¹⁵³Gd-BOPTA
 - ¹⁵³Gd-HP-DO3A
- 5 timepoints of HOPO IP treatment relative to ¹⁵³Gd IV administration
 - ↳ -1 hr, +1 hr, +6 hr, +24 hr, saline (control)
- n = 4
- excreta for each group collected daily for 4 days
- all mice euthanized and dissected after 4 days
- radioactivity of ¹⁵³Gd measured as a proxy for Gd

DATA



Biodistribution of ¹⁵³Gd in Organs



CONCLUSION

No significant amount of ¹⁵³Gd deposition is found in the organs of concern for all GBCAs but ¹⁵³Gd-HP-DO3A.

¹⁵³Gd was excreted largely through the urinary pathway for all GBCAs but ¹⁵³Gd-HP-DO3A.

¹⁵³Gd-HP-DO3A is not efficiently excreted via the urinary and fecal excretion pathways.

When ¹⁵³Gd was not excreted, it accumulated primarily in the liver. In addition, ¹⁵³Gd deposited in the soft tissue and the skeleton.

REFERENCES

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2. Rogosnitzky, M., & Branch, S. (2016). "Gadolinium-based contrast agent toxicity: a review of known and proposed mechanisms". *Biometals*, v 29(3), 365-76.
3. Rees, J., Deblonde, G., An, D., Ansoborlo, C., Gauny, S. & Abergel, R. (2018). "Evaluating the potential of chelation therapy to prevent and treat gadolinium deposition from MRI contrast agents". *Scientific Reports*, 8, 4419.