***Cite this as*:** Liya WEI, Zizhan LI, Niannian ZHONG, Leiming CAO, Guangrui WANG, Yao XIAO, Bo CAI, Bing LIU, Linlin BU. Preclinical models in the study of lymph node metastasis. *Journal of Zhejiang University-SCIENCE B (Biomedicine & Biotechnology)*, 2025, 26(8):740-762. https://doi.org/10.1631/jzus.B2400052

Preclinical models in the study of lymph node metastasis

Key words: Lymph node metastasis (LNM), Preclinical research, Preclinical models, Animal models

Research Summary

This review mainly focuses on existing preclinical models of lymph node metastasis, identifies current bottlenecks, and offers an outlook on forthcoming preclinical models:

- **Carcinogen-induced tumor models**
- **Transplantation mouse models**
- **Genetically engineered models**
- **Humanized mouse models**
- **Other models**

Innovation points

- **Introduction** of applications, advantages, and disadvantages of current preclinical models.

- **Summary** of the most updated research progress about preclinical models for lymphatic system research, focusing mainly on lymph node metastasis.

- **Emphasis** on the new generation of preclinical models, proposing future explorations to be addressed.

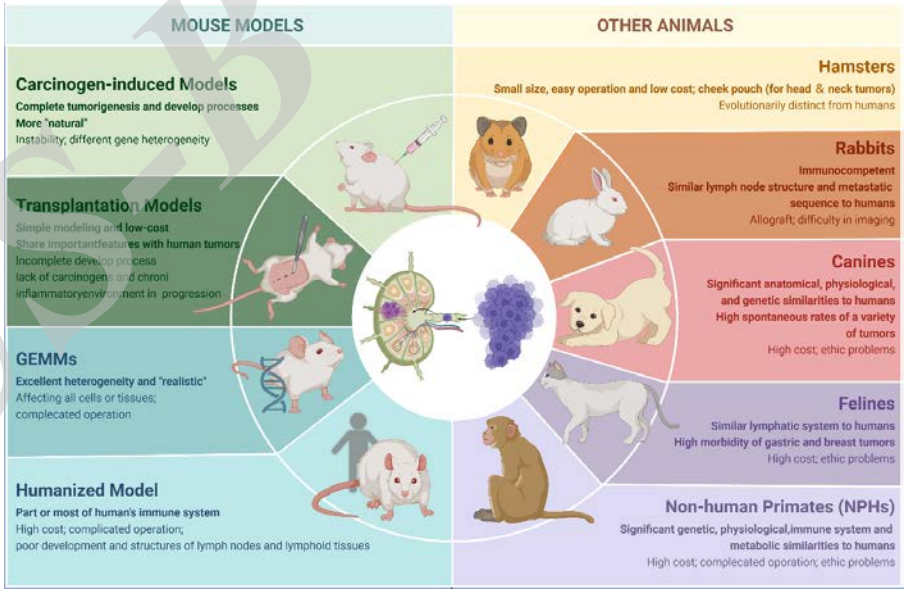

Figure 3

Innovation points

A series of comprehensive figures were generated to summarize the latest knowledge about preclinical models.

Figure 1 | Bridging the gap between basic research and clinical application.

Figure 2 | Types of mouse models currently in use and their construction.

Figure 3 | A summary of the advantages and disadvantages of different models.

Figure 4 | The gap between mouse models and the human body.

Figure 5 | Long road ahead for preclinical research.