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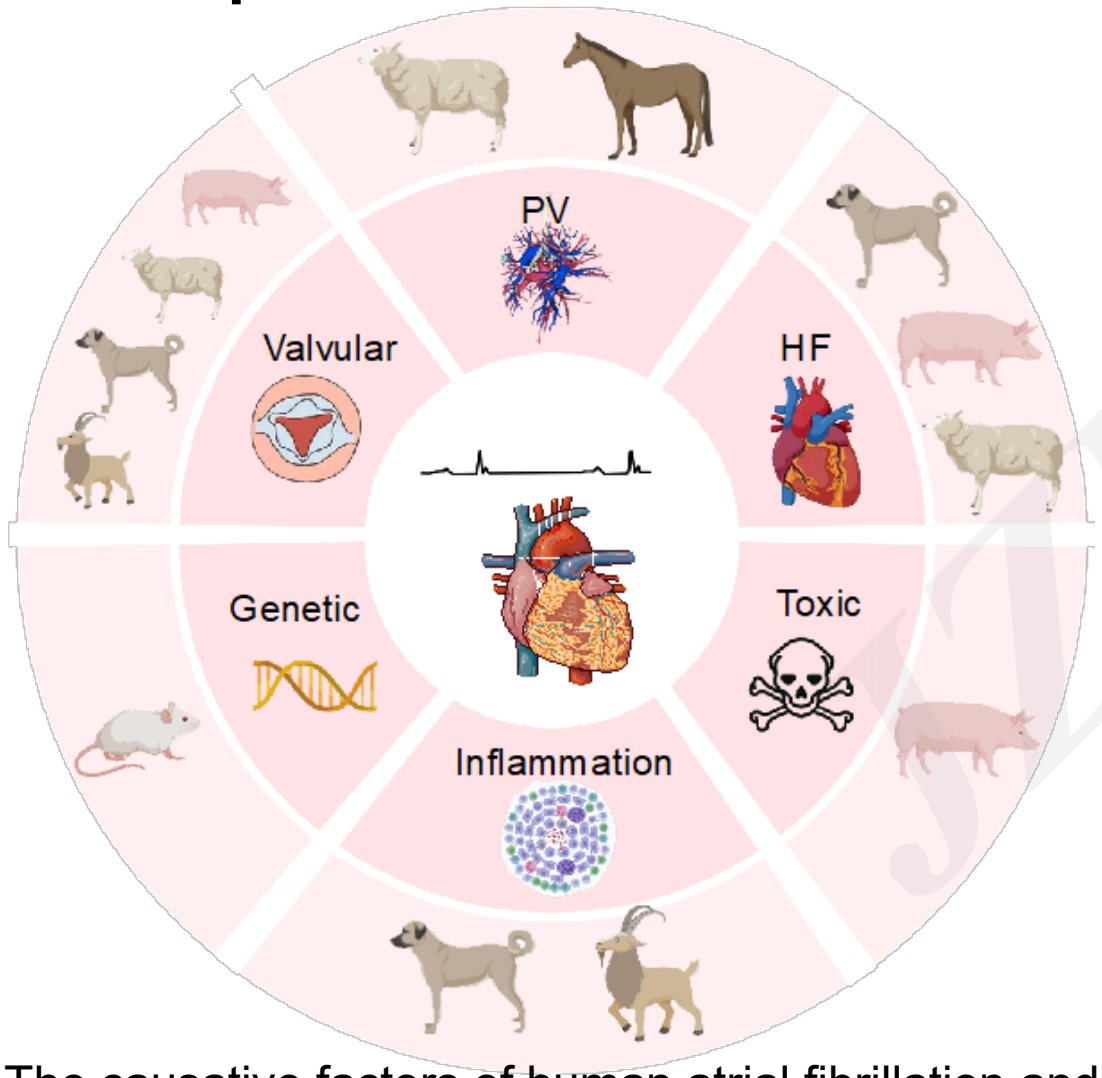
# Therapeutic advances in atrial fibrillation based on animal models



**Keywords:** atrial fibrillation, animal models; therapeutic

# *Summary*

**This review aims to summarize the various animal models of atrial fibrillation (AF) developed to date and the related advancements in AF treatment.**




The causative factors of human atrial fibrillation and the respective animal models

- **Small animal models of AF**
- **Large animal models of AF**
- **Advances in AF treatment**

# *Innovation points*

- **Introduction the pathogenesis and treatment strategy of AF**
- **Summary the characteristics of various animal models and their application in the study and treatment of AF**
- **Emphasis the role of various animal models in the treatment of AF**

Easy to generate and manipulate;
Low rearing costs

Differences in heart size and electrophysiology;
Tools used for human electrophysiological studies are not applicable to mice

Pharmacology Research;
Easier to perform experimental manipulations

Weak genetic manipulation;
Short duration of AF

Long duration

Relatively short action potential

Ability to use clinical instruments;
Anatomy and electrophysiology similar to human

Complex genetic background;
Significant differences in heart weight/body weight ratio;
Electrocardiographic differences;
Low social acceptance

Classical AF model

High feeding costs;
Low similarity to human physiology

Heart and coronary artery structure similar to human;
Electrophysiology similar to that of humans;
Action potentials similar to human; Gene editing is possible

Few coronary artery side branches

Natural development AF;
AF follows a similar progression to that of humans;
PV has ectopic electrical activity that can trigger AF

Electrophysiological properties are different from those of humans;
Different action potentials have different durations;
High feeding costs;Low social acceptance

# *Innovation points*

**A series of comprehensive tables were generated to summarize relevant information about AF animal models.**

- Table 1 Summary of existing methods and mechanisms in AF animal models
- Table 2 The main mechanisms of different types of AF
- Table 3 Application of common antiarrhythmic drugs in large animal models