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# Myocardial ischemia-reperfusion induces STAR translocation into mitochondria independently from TSPO

S Leick, J Bréhat, J Musman, B Ghaleh, Didier Morin, S Pons

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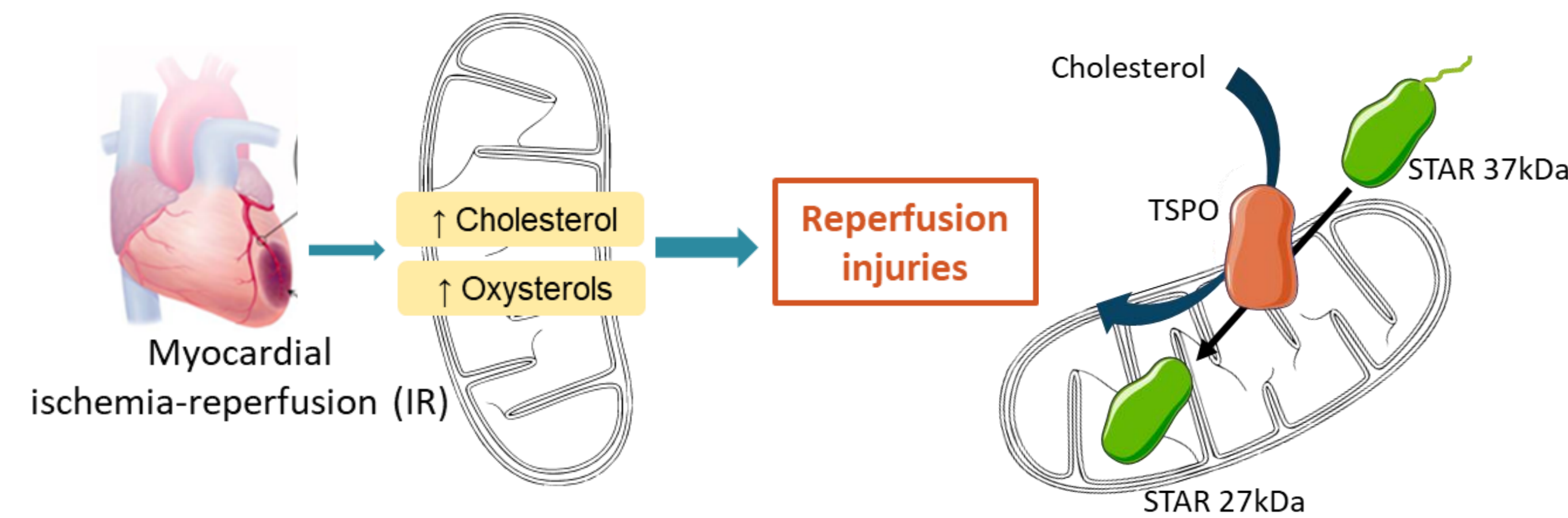
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## Introduction

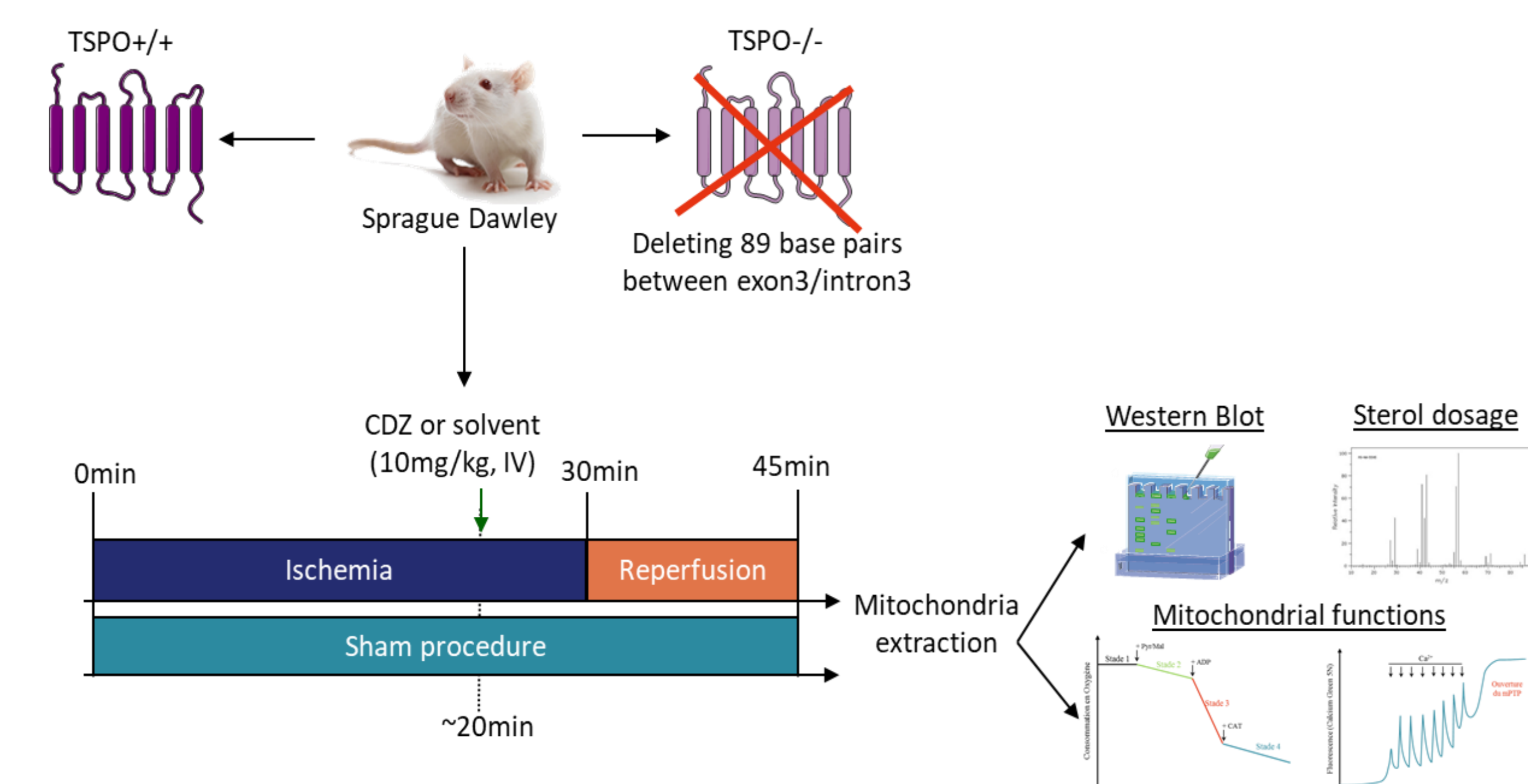


During myocardial ischemia-reperfusion, mitochondrial accumulation of sterols is deleterious for cardiomyocytes. In steroidogenic organs, cholesterol is transferred into mitochondria, via TSPO (translocator protein) and STAR (steroidogenic acute regulatory protein). However little is known regarding the effects of these proteins in the heart.

## Objective

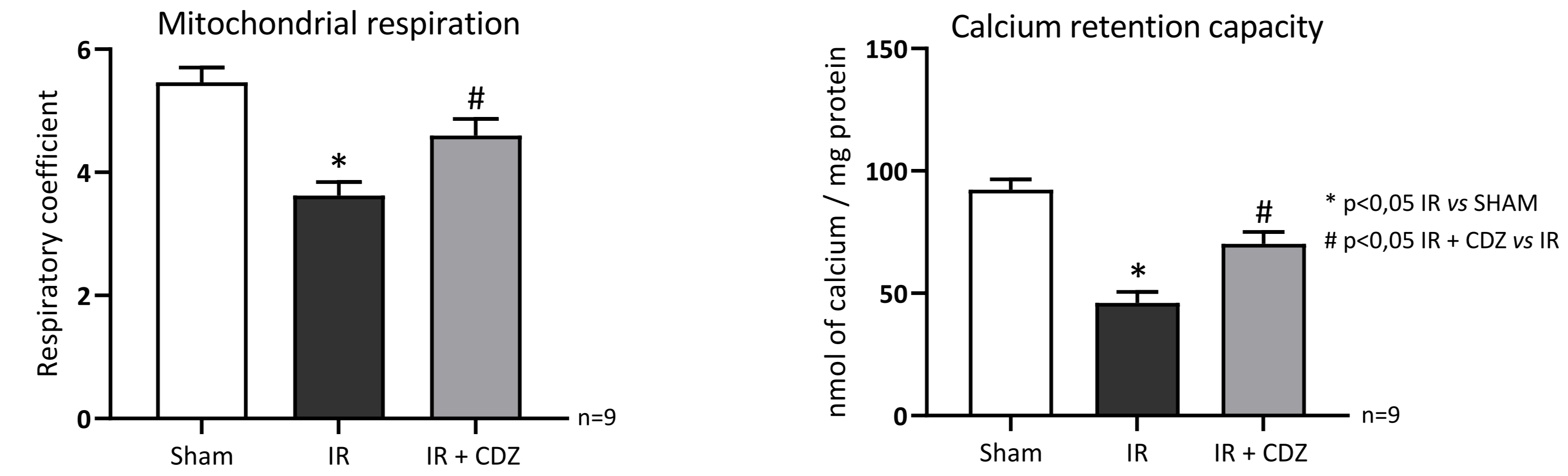
This study aims to investigate the TSPO and STAR dependent mechanisms involved in cholesterol transfer in cardiac mitochondria after IR in order to develop cardioprotective strategies.

## Methods

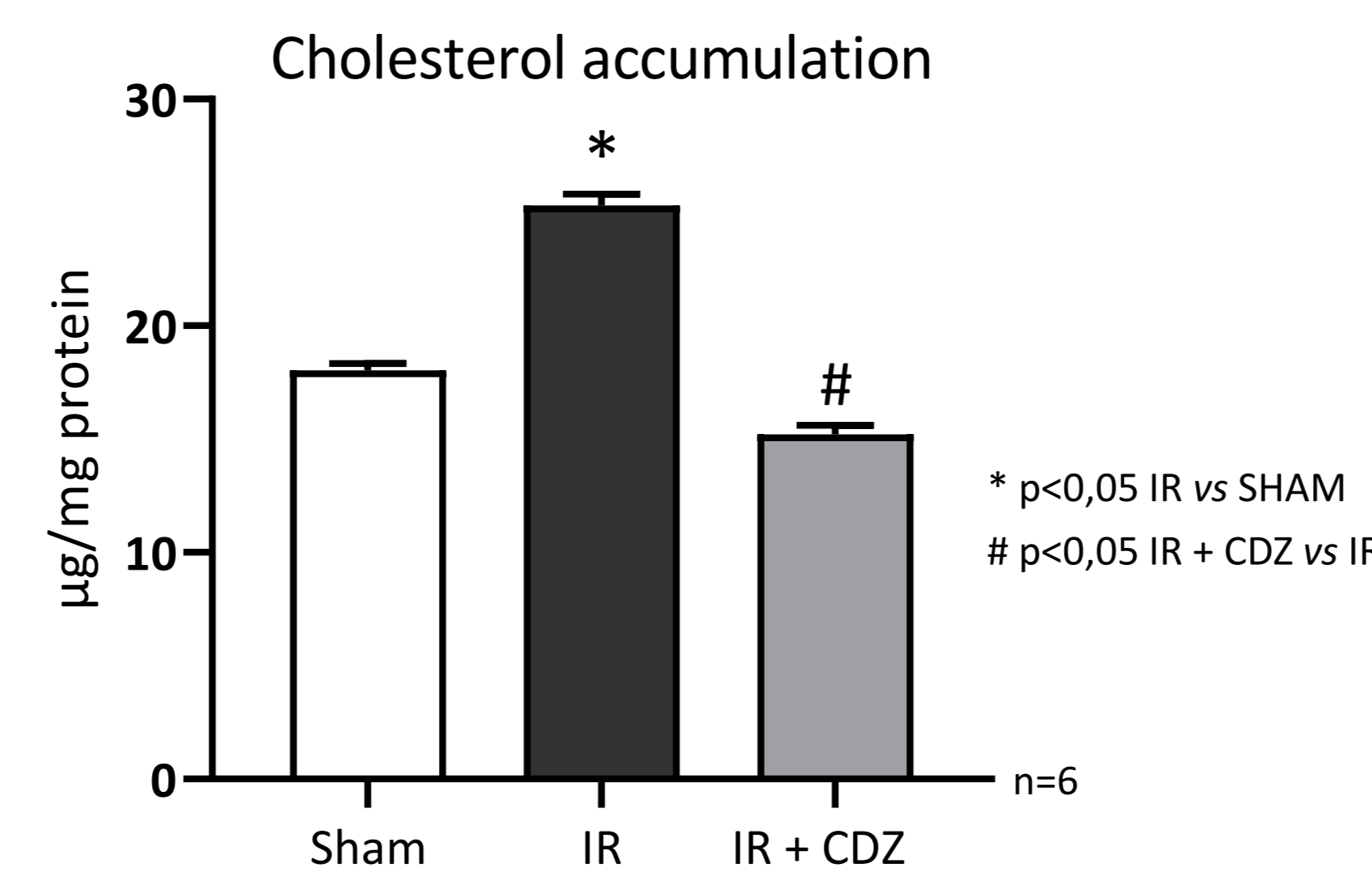


4'-chlorodiazepam (CDZ): inhibitor of TSPO

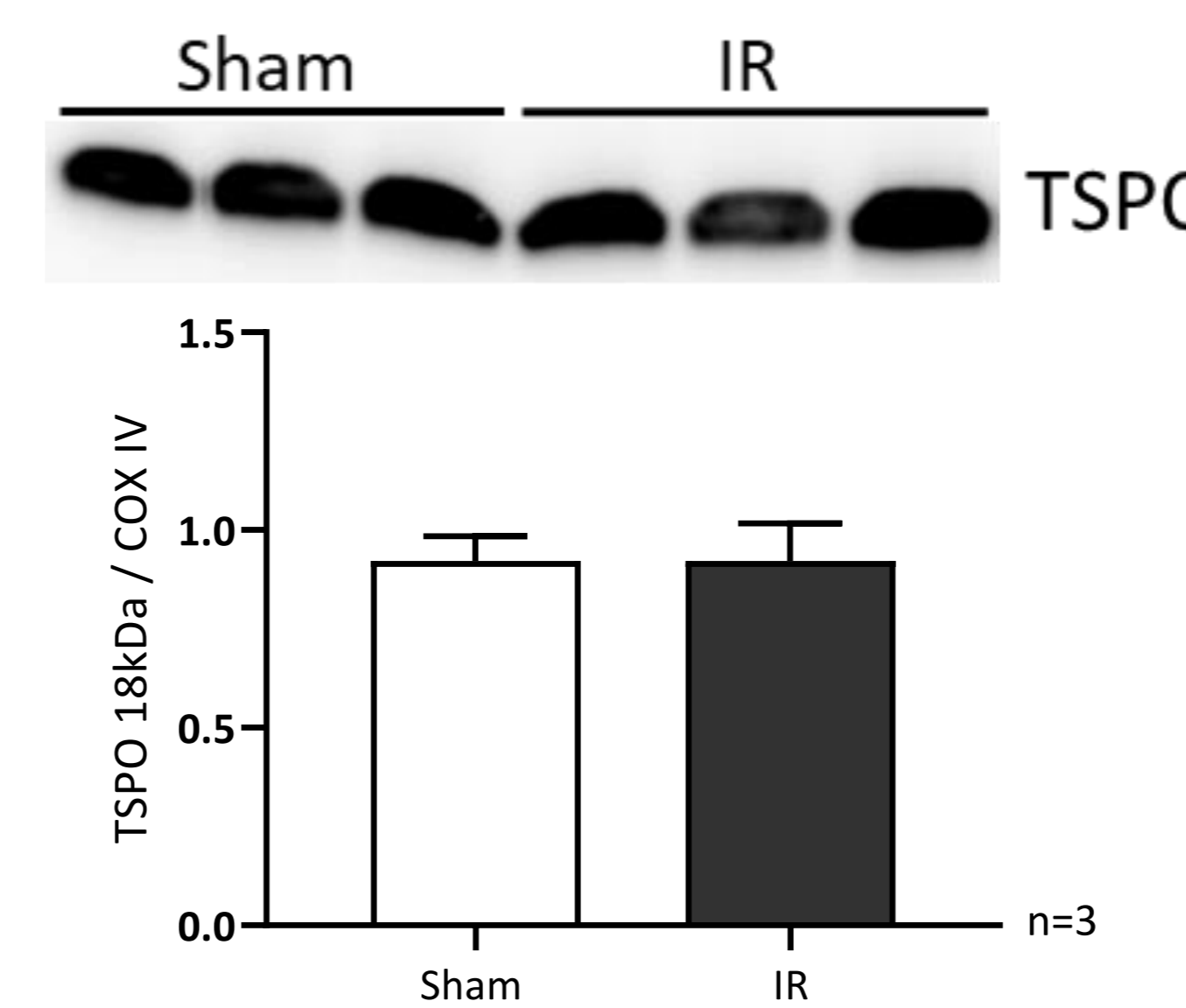
## Result 1: In TSPO+/+ rats, ischemia-reperfusion (IR) alters mitochondrial function which is restored by 4'-chlorodiazepam (CDZ)



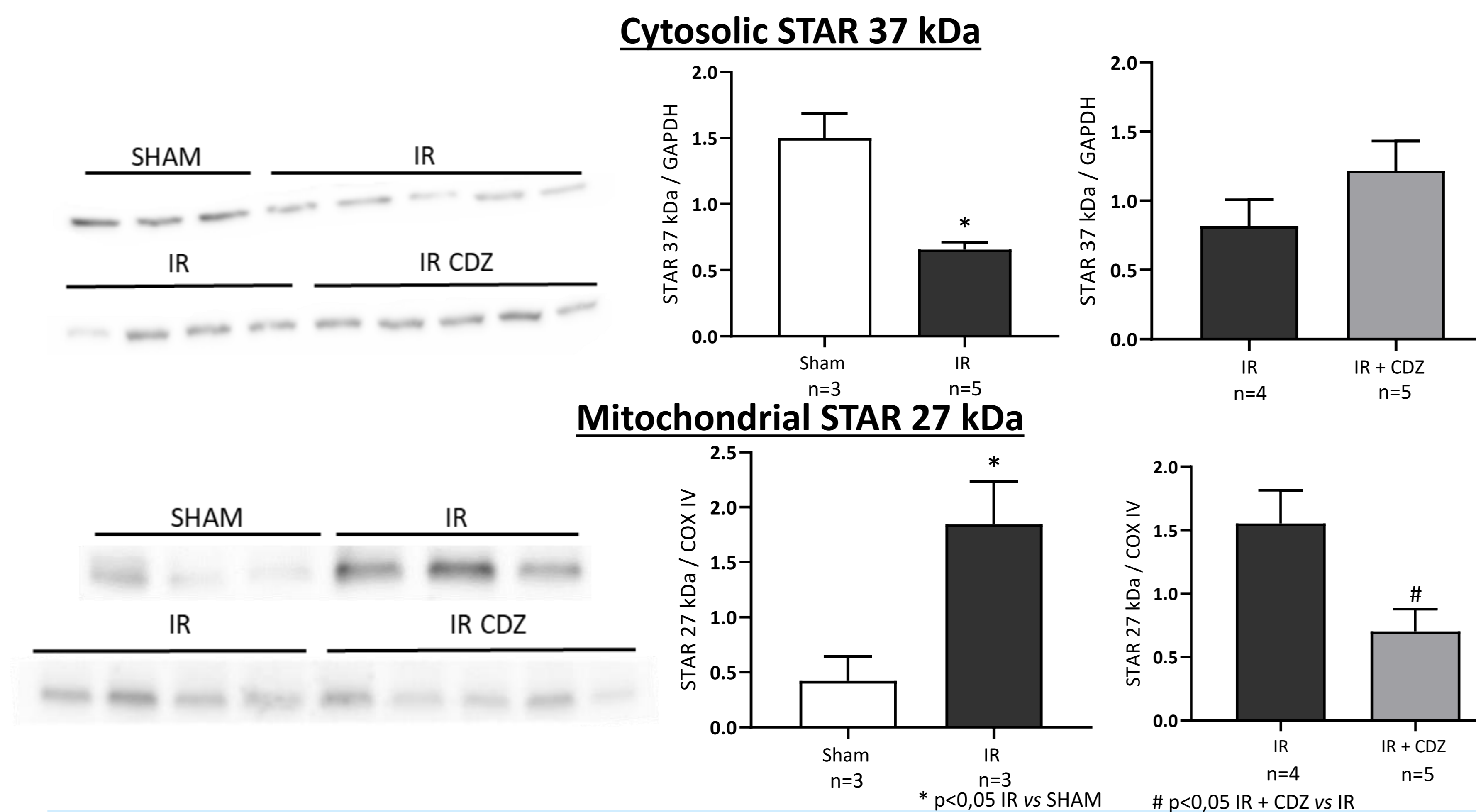
## Result 2: CDZ limits cholesterol accumulation after IR



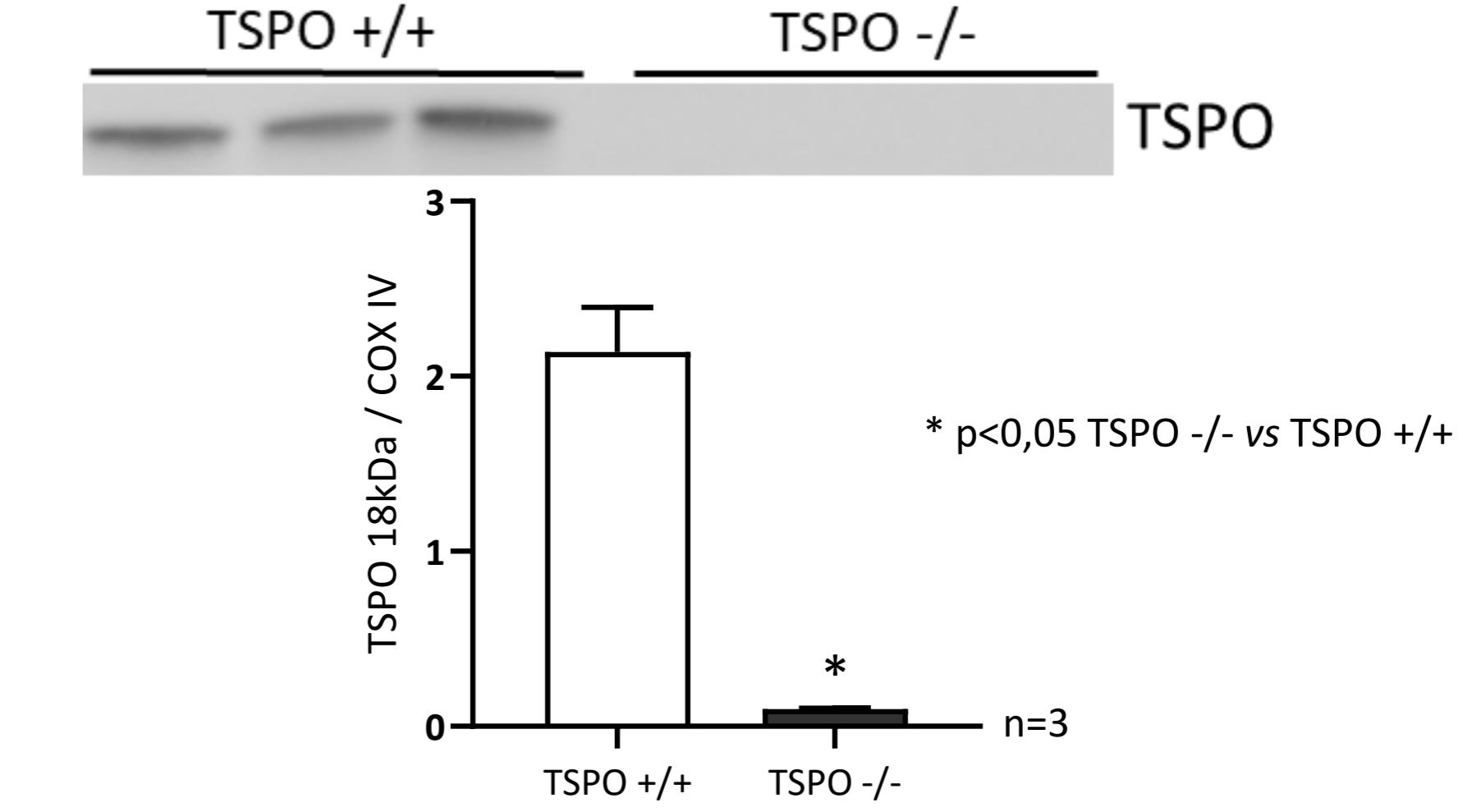
## Results 3: TSPO expression remains unchanged after IR



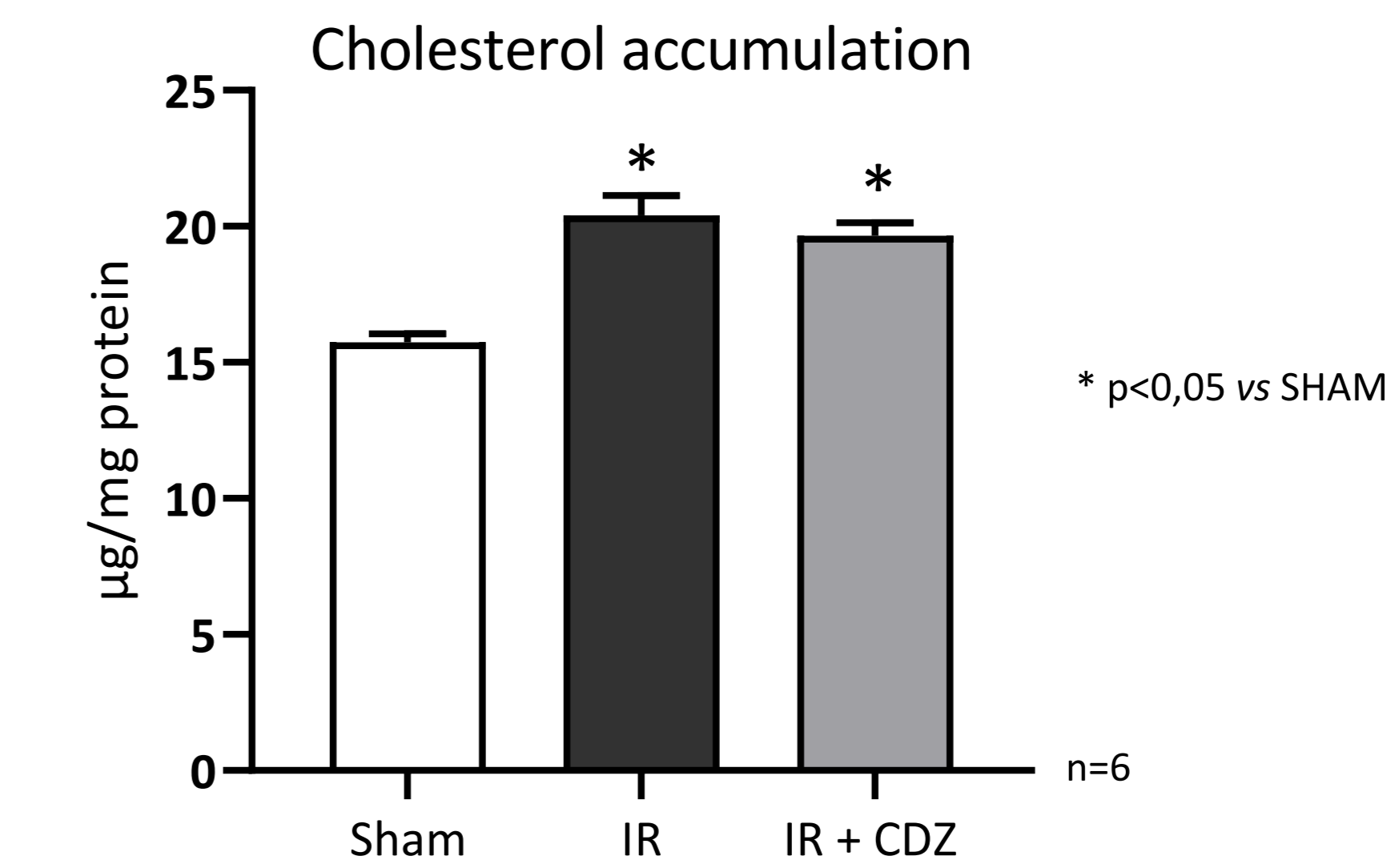
## Result 4: CDZ inhibits STAR translocation in cardiac mitochondria after IR, without effect on cytosolic STAR



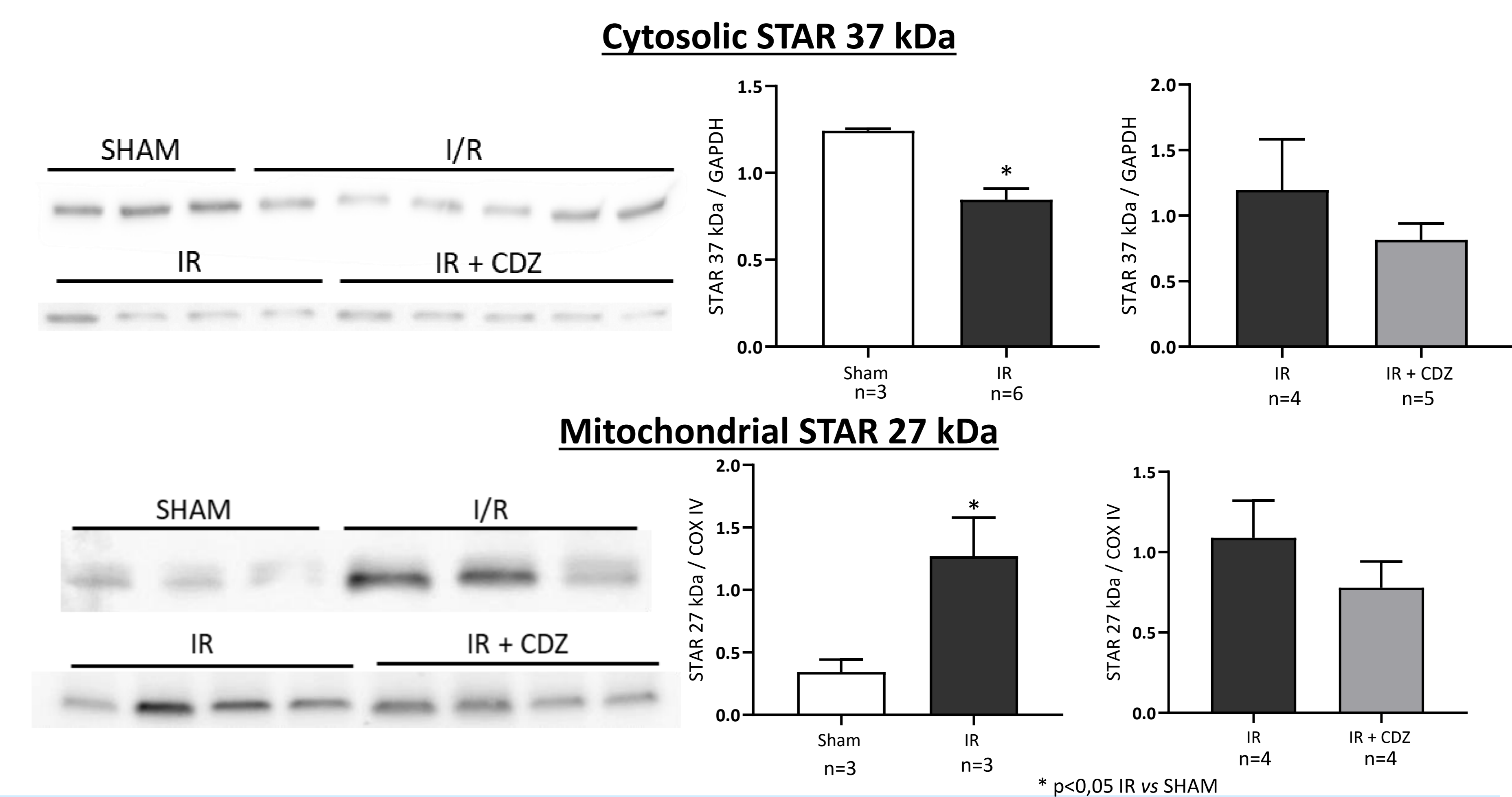
## Result 5: TSPO deletion in TSPO-/- rats



## Result 7: Loss of effect of CDZ on cholesterol accumulation



## Result 8: TSPO deletion inhibits the effect of CDZ on STAR translocation



## Conclusion

IR increases STAR translocation into cardiac mitochondria, sterol accumulation and mitochondrial dysfunction. This process is modulated by TSPO, as demonstrated by results obtained on TSPO-/- rats. So, targeting TSPO-STAR seems to be promising for the development of future cardioprotective strategies.