

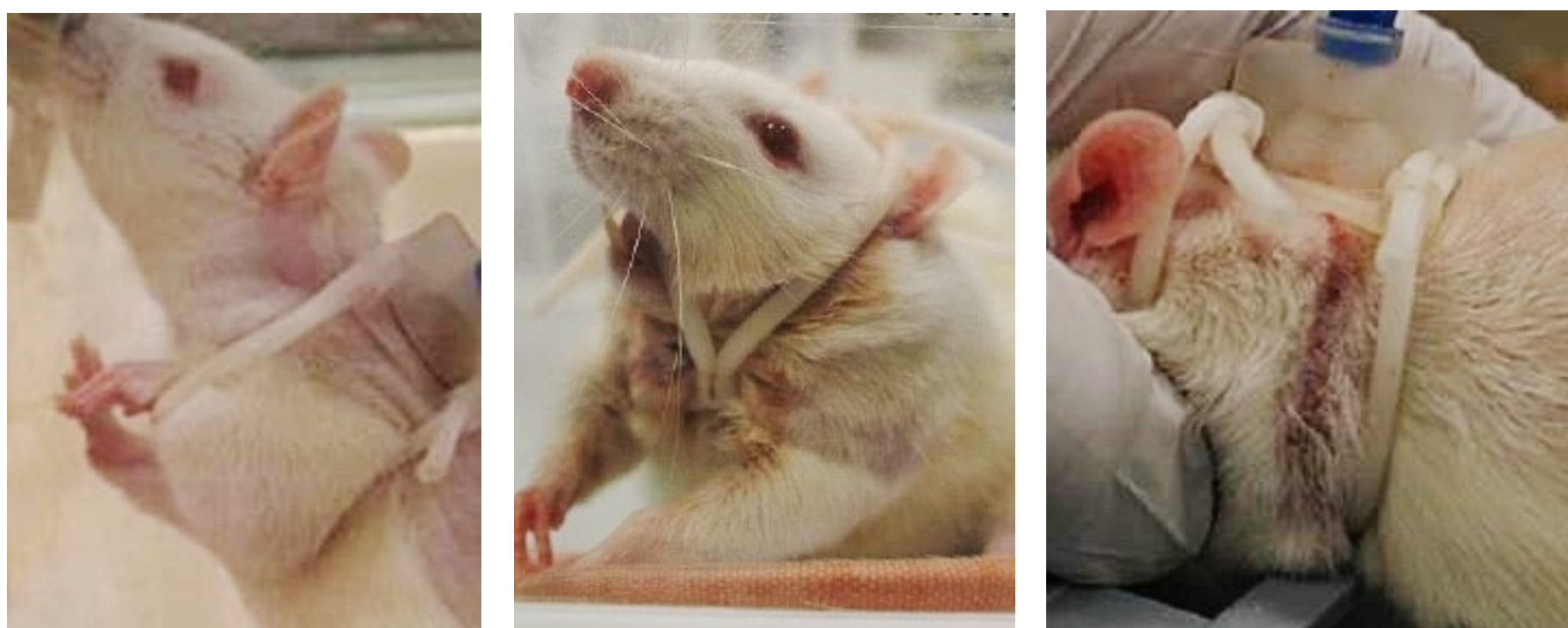


# Improved chronic vascular catheterization in unrestrained conscious rats

## Background:

Chronic catheters are used to collect repeated blood samples and to infuse substances in conscious, unrestrained animals thereby minimizing stress responses. The classical method is to implant one catheter in a carotid artery for blood sampling and one in a jugular vein for infusions. A harness is often used to stabilize and protect the catheters. Chronic arterial catheters are however associated with increased risk of thrombotic events and weight loss. We have also experienced that the harness can cause skin reactions and we have had animals entangled in the harness causing animal stress.

## Vascular Access Harness (VAH):



Examples of animals with trapped limb, mouth and skin reactions  
Dawn Bellinger, AALAS 66<sup>th</sup> National Meeting 2015, Phoenix, AZ

## Approach:

In collaboration with Instech Laboratories, we have developed an alternative method using a Vascular Access Button (VAB) and placed the catheters in a jugular and femoral vein in order to improve animal welfare and to refine the method resulting in generation of higher quality data from fewer number of animals.

## Results:

Figure 1 shows a comparison between the % of animals excluded from studies when using VAH with an artery and a vein catheter (VAH) compared to VAB with two vein catheters (VAB). By using VAB all skin reactions and thrombotic events were excluded. Issues with body weight loss following surgery were also eliminated (data on demand). Another benefit is that VAB rats can be group housed during post-surgery recovery.

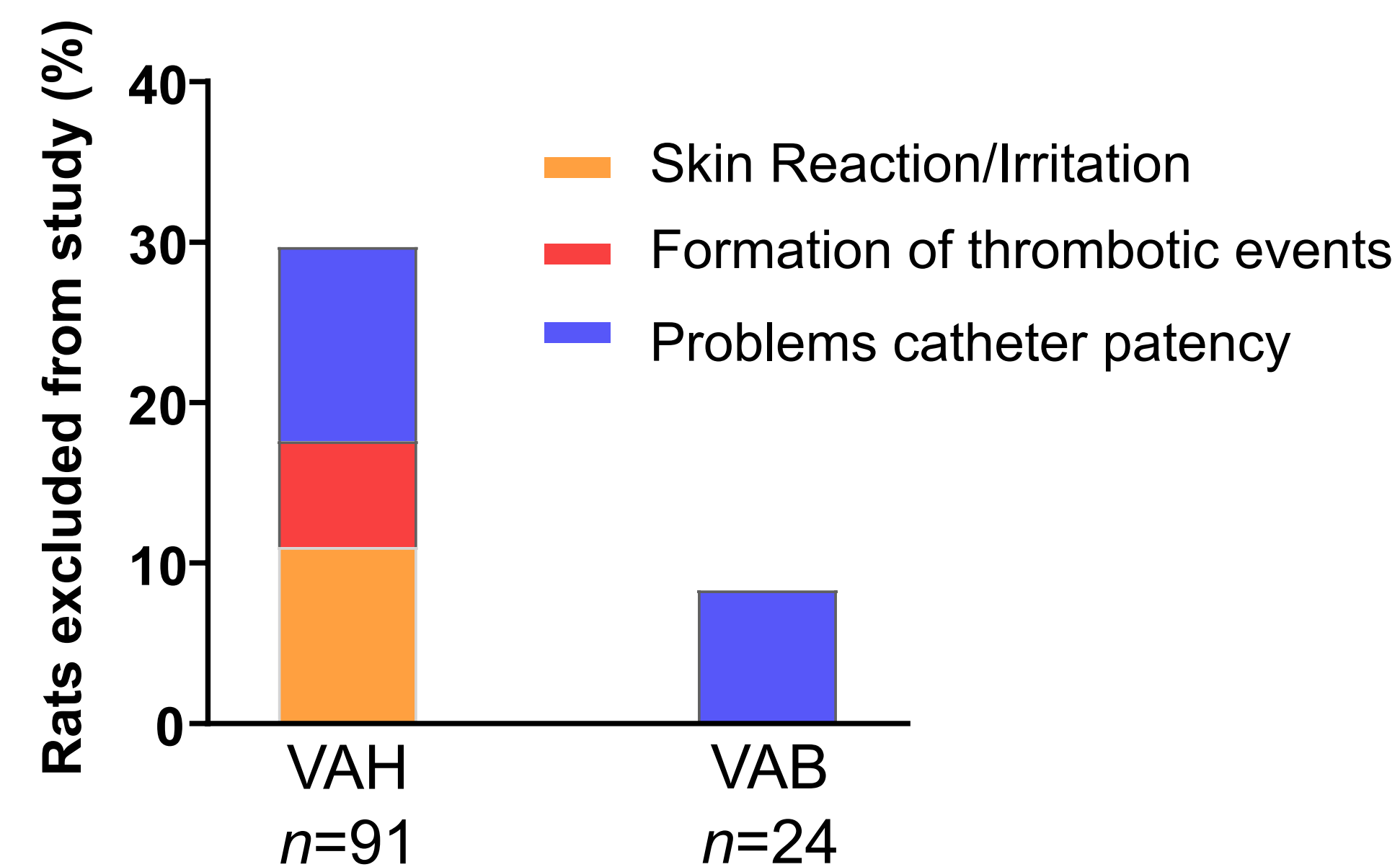


Figure 1: Reasons for exclusion

## Impact:

By using a VAB and two vein catheters we have refined the chronic vascular catheterization method leading to an increased success rate, eg 92% of all catheterized rats are now used in experiments compared to only 70% earlier.

## Vascular Access Button (VAB):



VAB+cap

VAB surgery and post-surgery housing

## Communication:

The new VAB chronic catheter model has been successfully implemented internally in several projects, delivering high-quality decision making data for several projects including; Tenapanor, FAPa, SGLT1 and UCP-1. This improved method has also been transferred and implemented at an external supplier from whom we buy animals for PK experiments.

## Conclusions:

Advantages with VAB and two vein catheters:

- No thrombotic events
- No skin reactions
- No harness
- Possibility to group house
- Improved body weight recovery

**Improved animal welfare leading to reduced use of animals**

