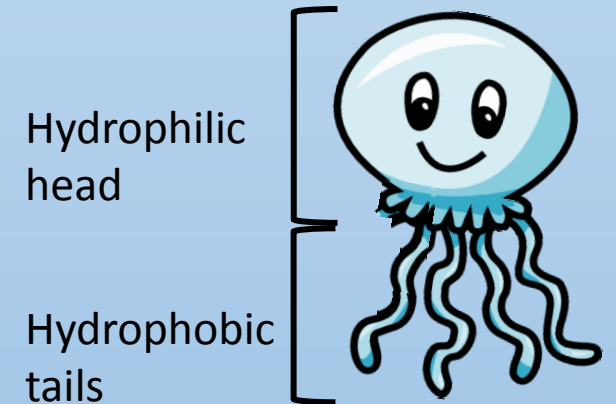


Effects of Cardiolipin on Vascular Smooth Muscle Cell Dedifferentiation and Migration

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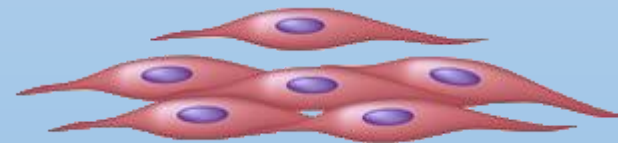
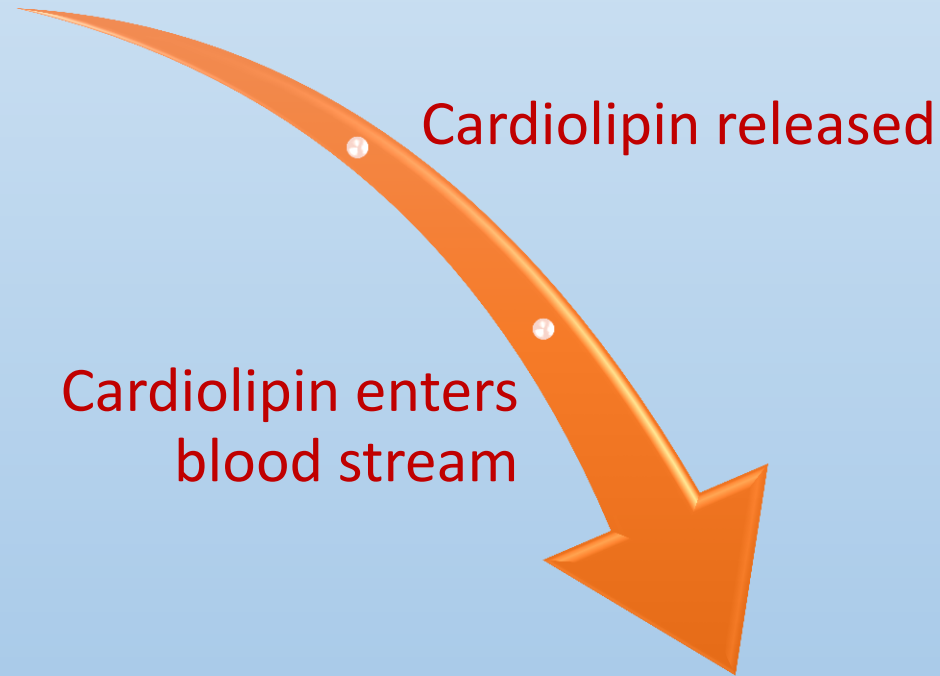
Cardiolipin

- ♥ Phospholipid molecule
- ♥ Found in inner mitochondrial membrane of all cells
- ♥ Functions:
 - ◆ Energy production
 - ◆ Cell apoptosis
 - ◆ Diagnose severity of myocardial infarction



Following Myocardial Infarction

When cells die
(e.g. during myocardial infarction)



Vascular smooth muscle cells (VSMC)

Goal

- ♥ To explore the effect of physiological concentrations of cardiolipin on VSMC dedifferentiation



Experiments

- ♥ Used adult male mice aorta
- ♥ Incubated with physiological cardiolipin concentrations
 - Previous studies eliminated cardiolipin
- ♥ Incubated for two days (unless otherwise indicated)

(1) Effect of cardiolipin on VSMC dedifferentiation

Method	Immunoblotting								
Results	<p style="text-align: center;">Calponin Quantity</p> <p>Calponin Quantity (%)</p> <p>Control 1µM CL 10µM CL</p> <p>Cardiolipin Concentration</p> <p>Control 1µM cardiolipin 10µM cardiolipin</p> <table border="1"><thead><tr><th>Cardiolipin Concentration</th><th>Calponin Quantity (%)</th></tr></thead><tbody><tr><td>Control</td><td>~88</td></tr><tr><td>1µM cardiolipin</td><td>~62*</td></tr><tr><td>10µM cardiolipin</td><td>~43*</td></tr></tbody></table>	Cardiolipin Concentration	Calponin Quantity (%)	Control	~88	1µM cardiolipin	~62*	10µM cardiolipin	~43*
Cardiolipin Concentration	Calponin Quantity (%)								
Control	~88								
1µM cardiolipin	~62*								
10µM cardiolipin	~43*								
Conclusion	Even 1µM of cardiolipin significantly lowered calponin concentration								

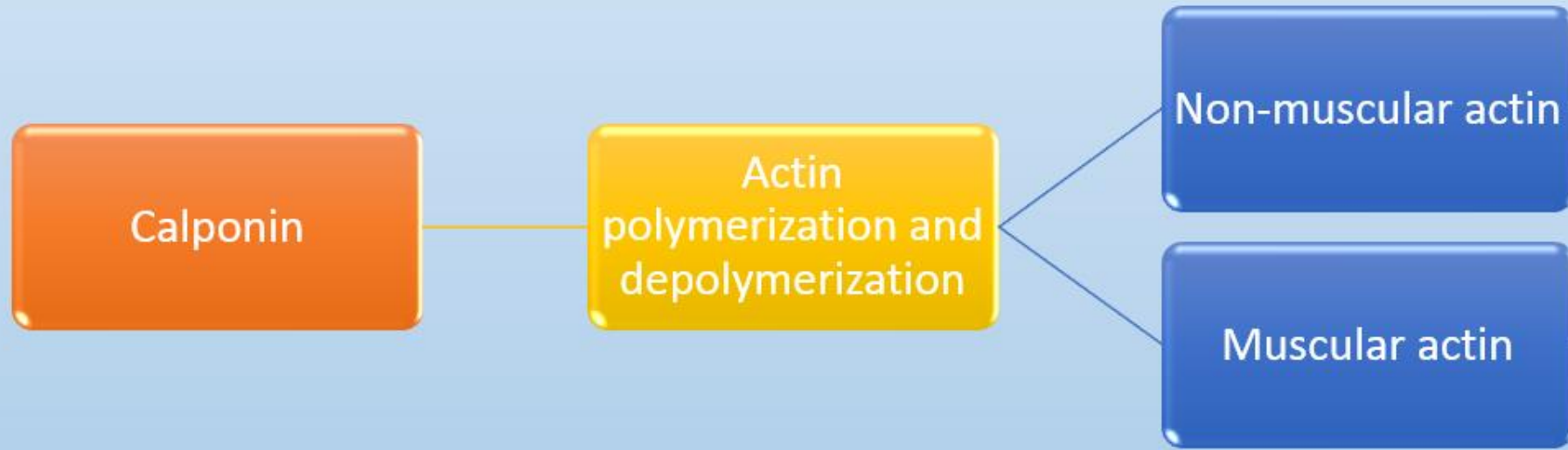
Calponin

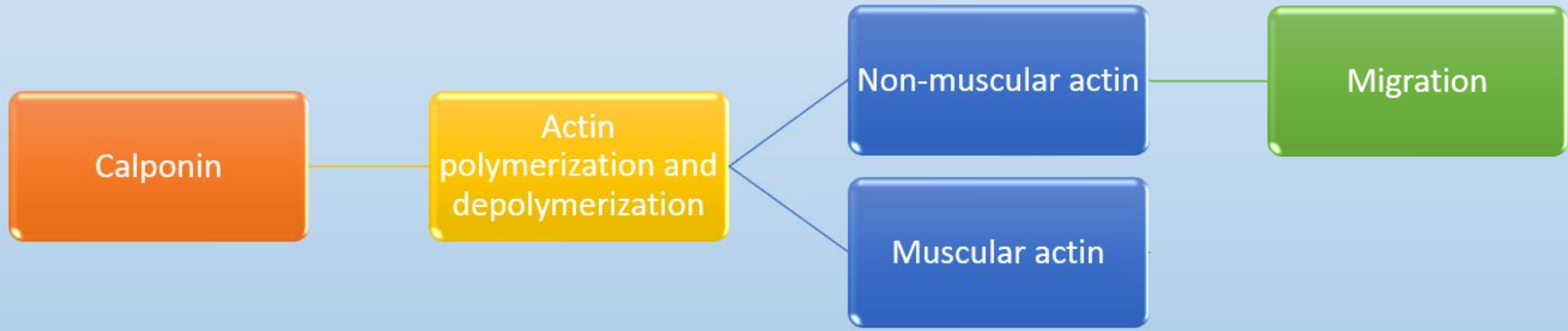
Calponin

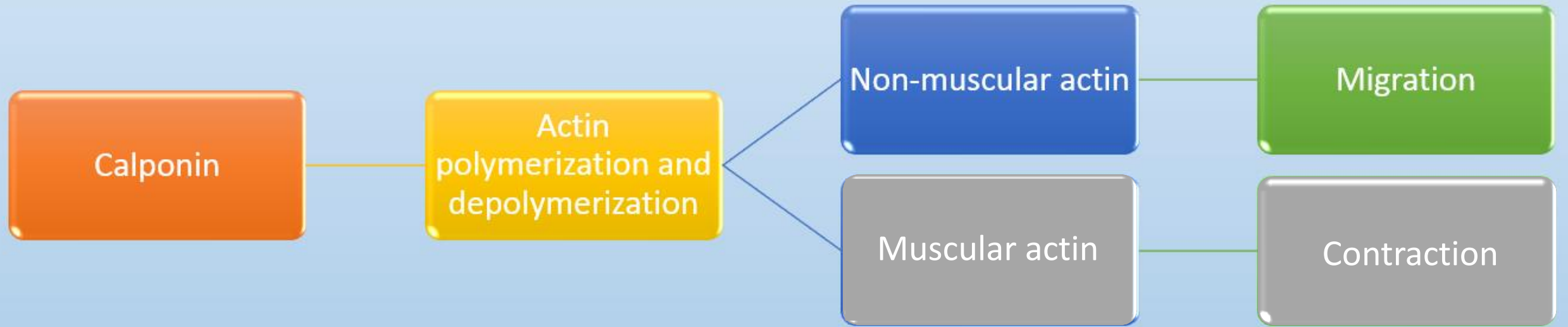
Actin
polymerization and
depolymerization

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graph LR; A[Calponin] --- B[Actin polymerization and depolymerization]
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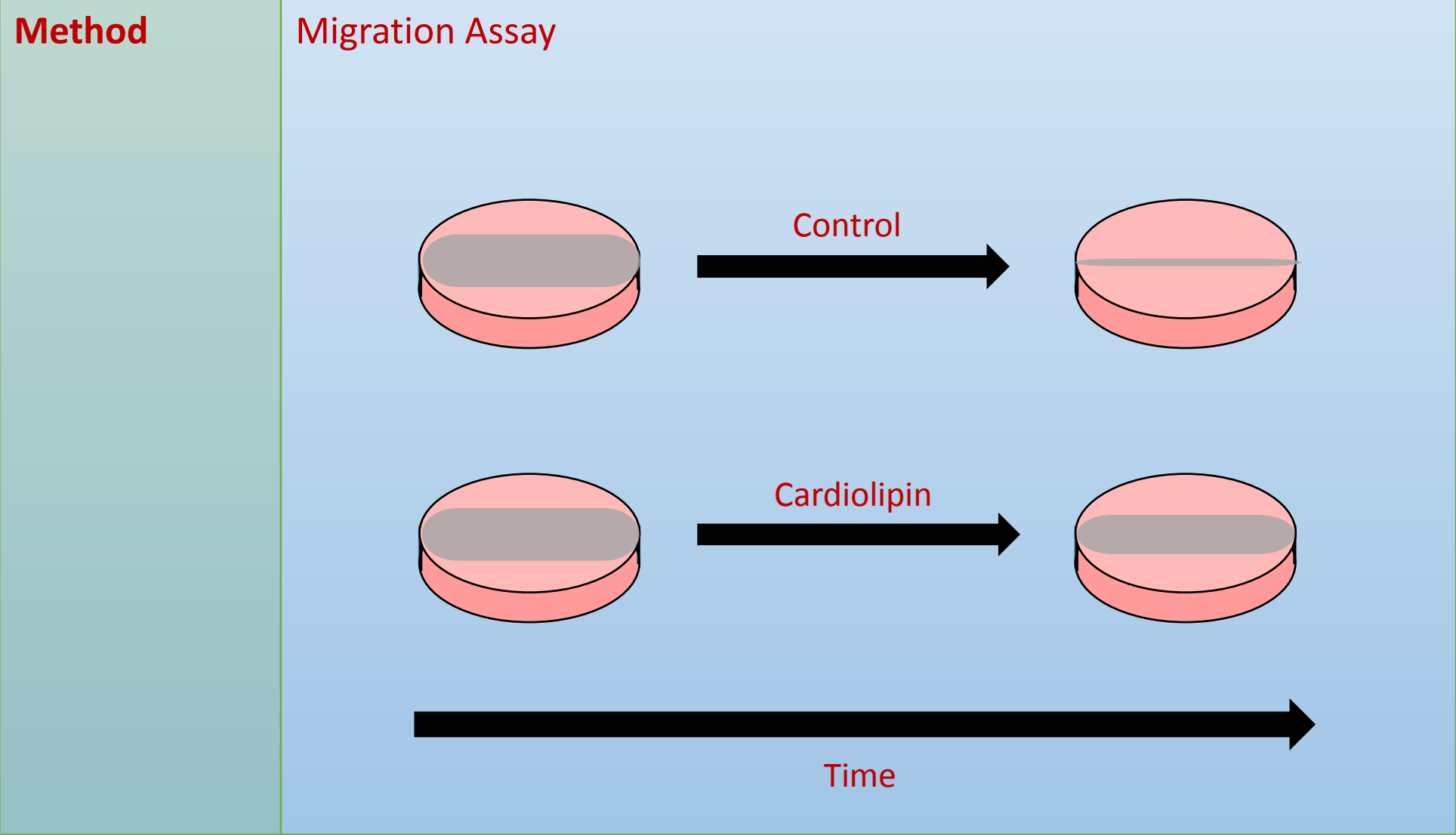
The diagram consists of two rounded rectangular boxes connected by a thin horizontal line. The box on the left is orange and contains the text 'Calponin'. The box on the right is yellow and contains the text 'Actin polymerization and depolymerization'.



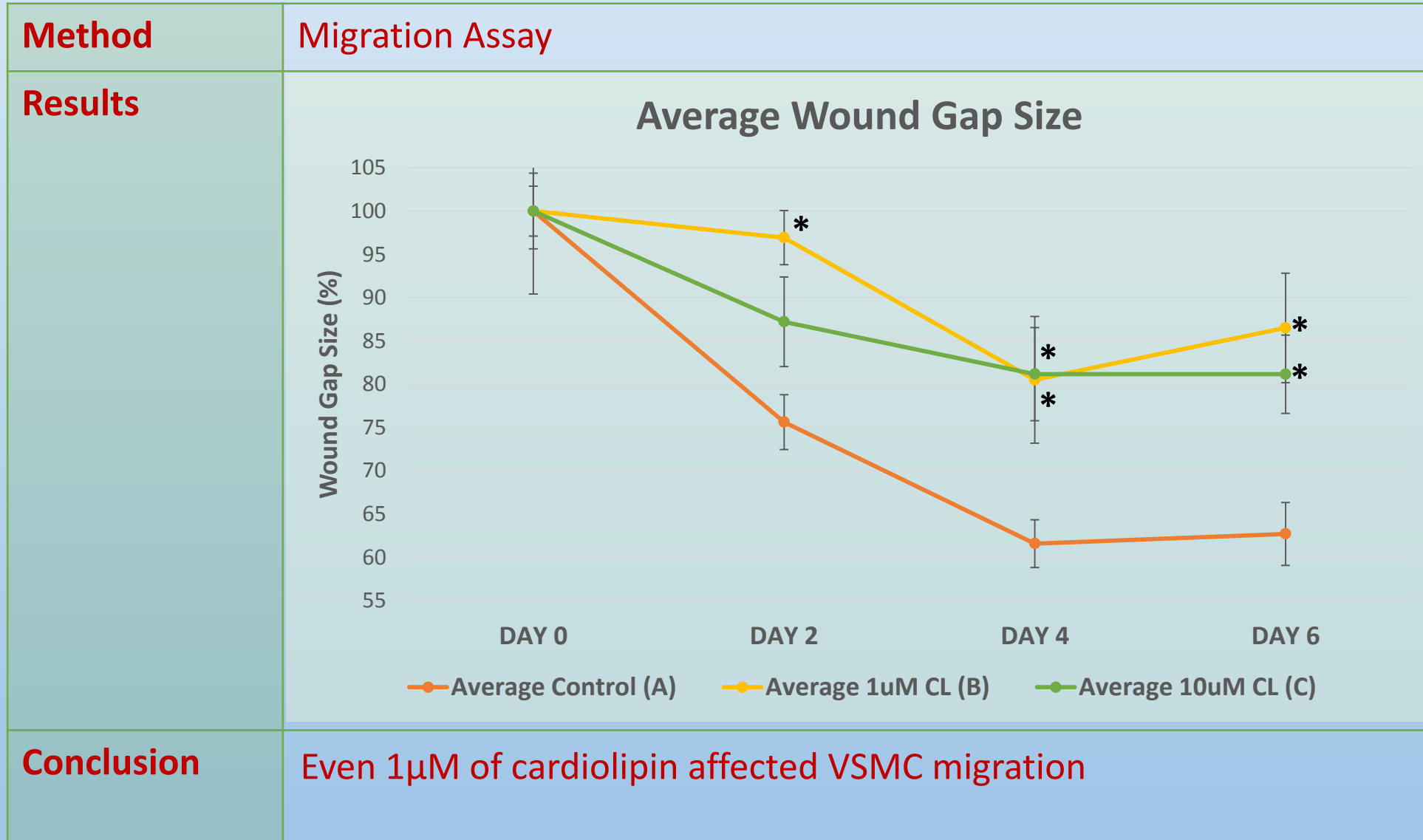


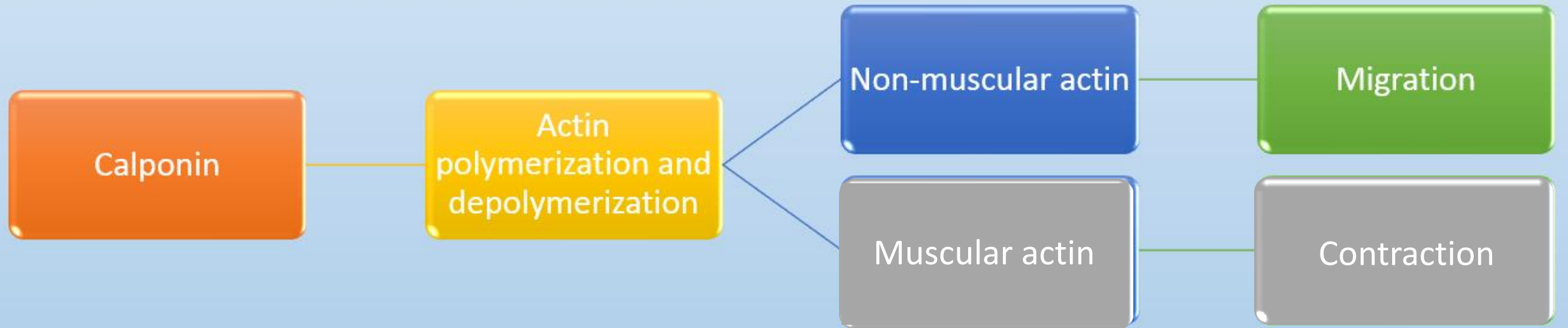


(2) Effect of cardiolipin on VSMC migration?

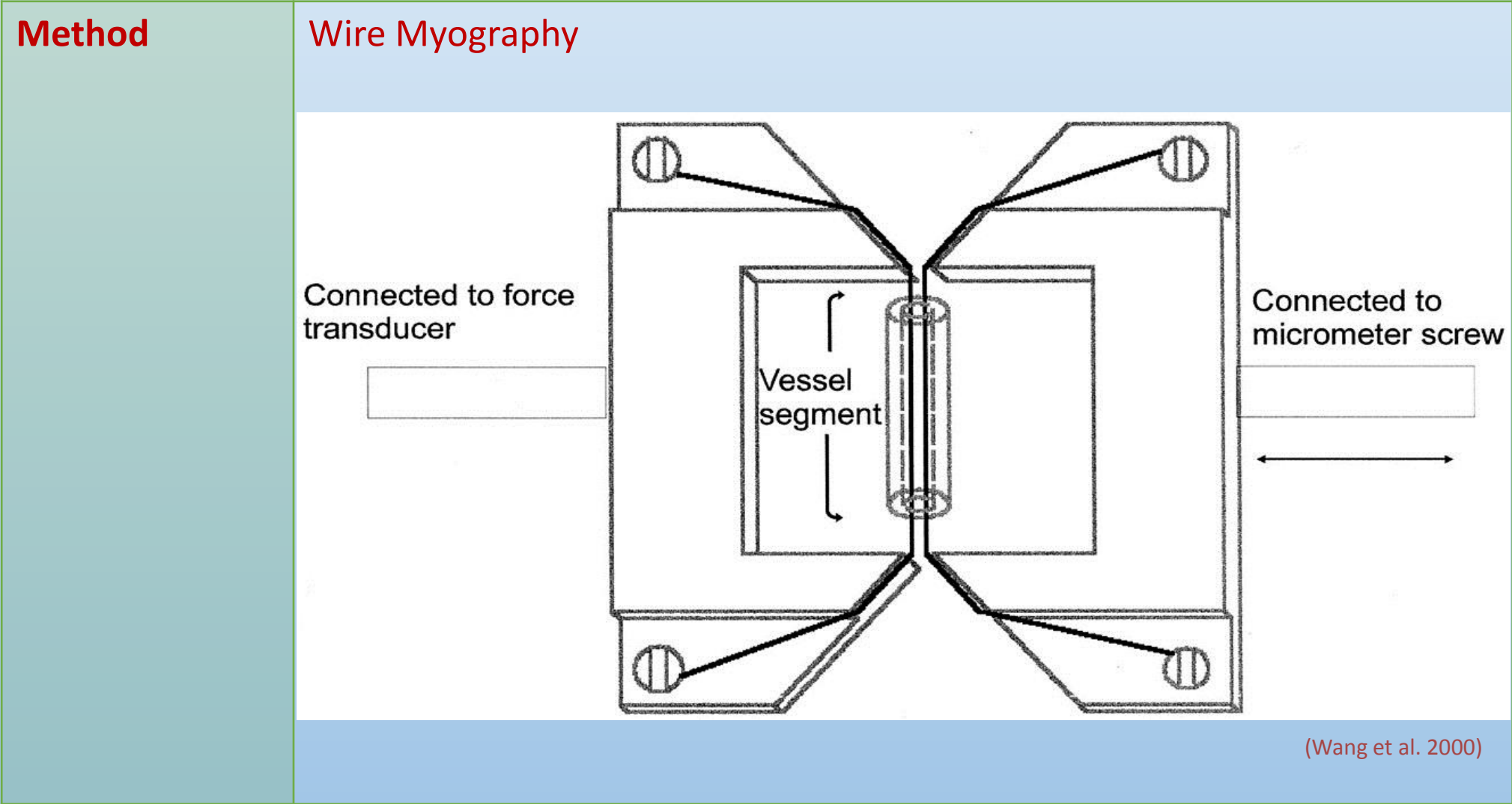


(2) Effect of cardiolipin on VSMC migration?





(3) Effect of cardiolipin on aorta contractile function



3) Effect of cardiolipin on aorta contractile function

Method	Isometric force measurement								
Results	<p style="text-align: center;">Contraction Force</p> <p>Contraction Force (N/mm)</p> <table border="1"><thead><tr><th>Concentration</th><th>Contraction Force (N/mm)</th></tr></thead><tbody><tr><td>Control</td><td>~0.37</td></tr><tr><td>1 μM</td><td>~0.43</td></tr><tr><td>10 μM</td><td>~0.50</td></tr></tbody></table>	Concentration	Contraction Force (N/mm)	Control	~0.37	1 μM	~0.43	10 μM	~0.50
Concentration	Contraction Force (N/mm)								
Control	~0.37								
1 μM	~0.43								
10 μM	~0.50								
Conclusion	Cardiolipin has no effect on aorta contraction ability								

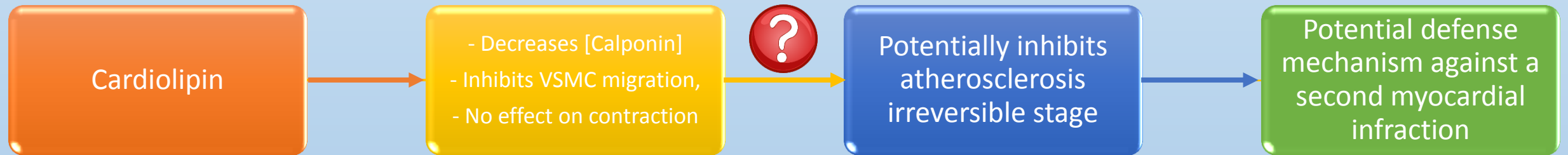
Overall Impact

Cardiolipin

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graph LR; A[Cardiolipin] --> B["- Decreases [Calponin]  
- Inhibits VSMC migration,  
- No effect on contraction"]
```

- Decreases [Calponin]
- Inhibits VSMC migration,
- No effect on contraction

Overall Impact



Thank you!

