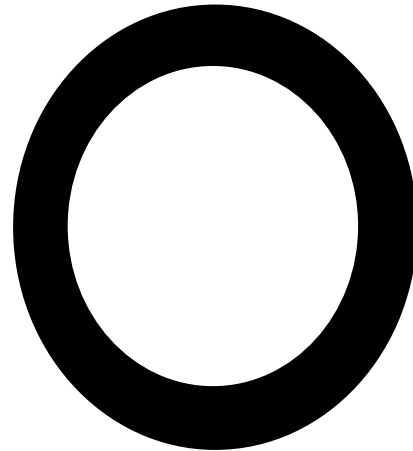


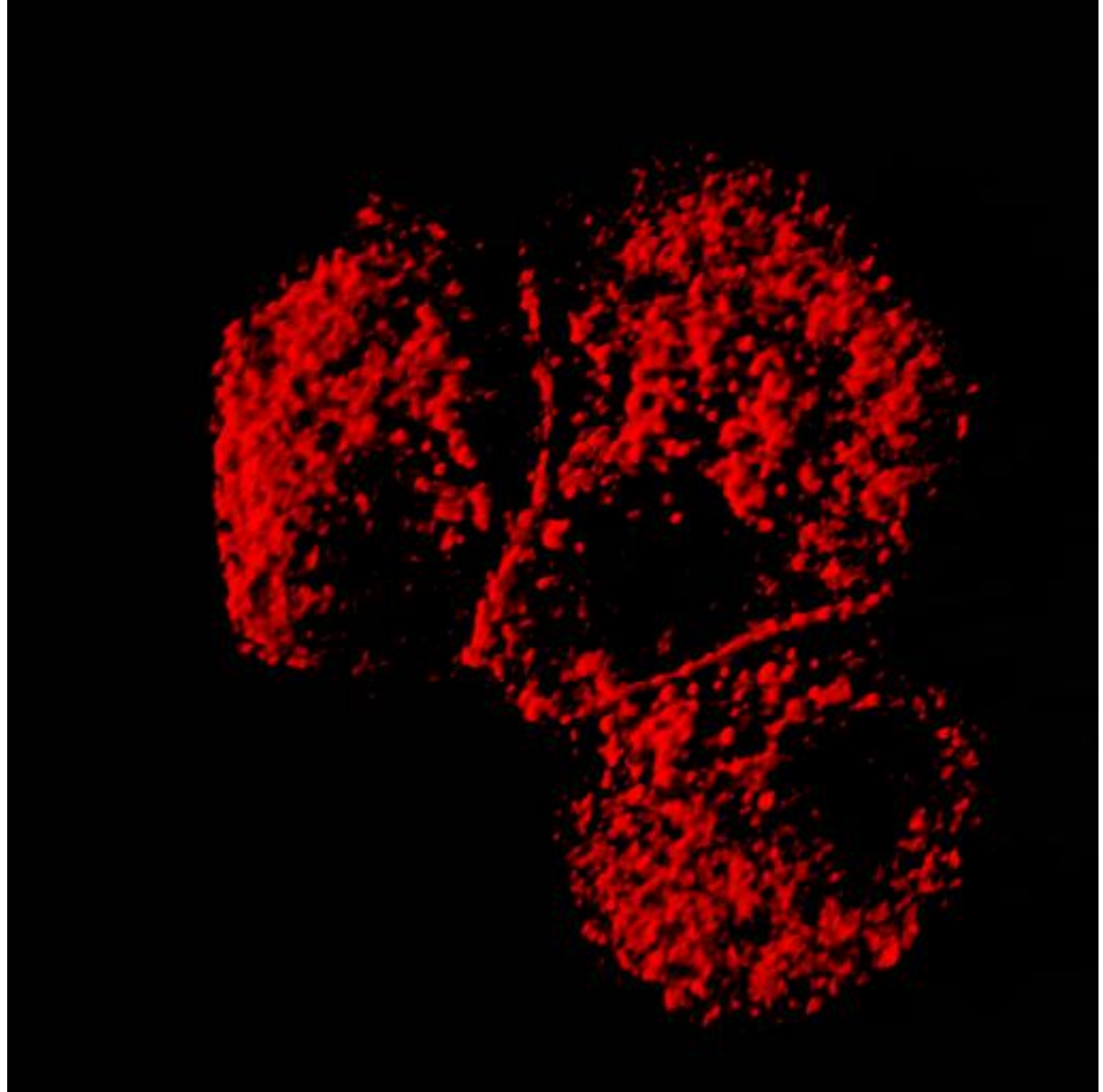
# FUSION MEMBRANAIRE ET EXOCYTOSE



- Types et pools vésiculaires
- Etapes de fusion
- pH, gradients et calcium
- Vitesses et vésicules
- Pools et mécanismes moléculaires
- Plusieurs contenus

# SYSTEMES ET POOLS

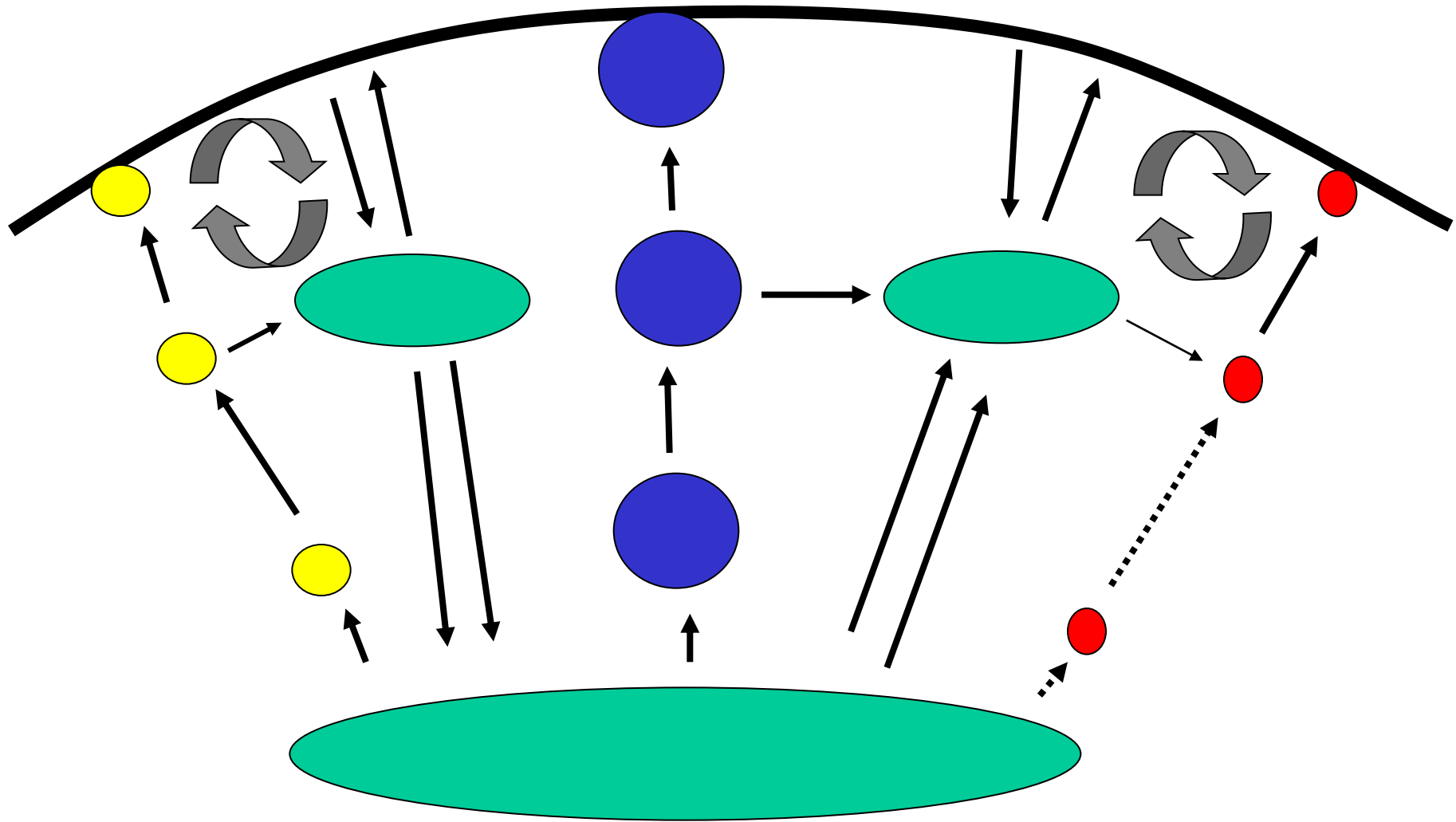
*les LDCVs*



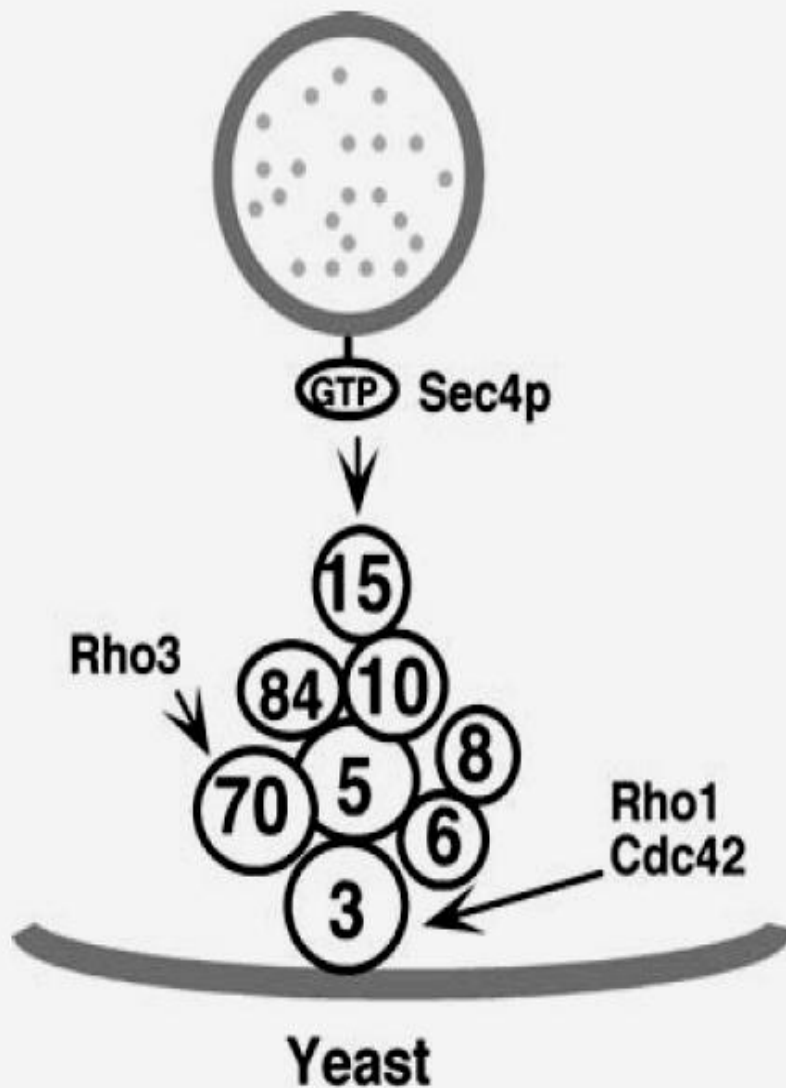
# SYSTEMES ET POOLS *les vésicules*

- Vésicules sécrétoires (VLCD) ●
- Vésicules de transport ●
- Vésicules synaptiques/SLMV ●

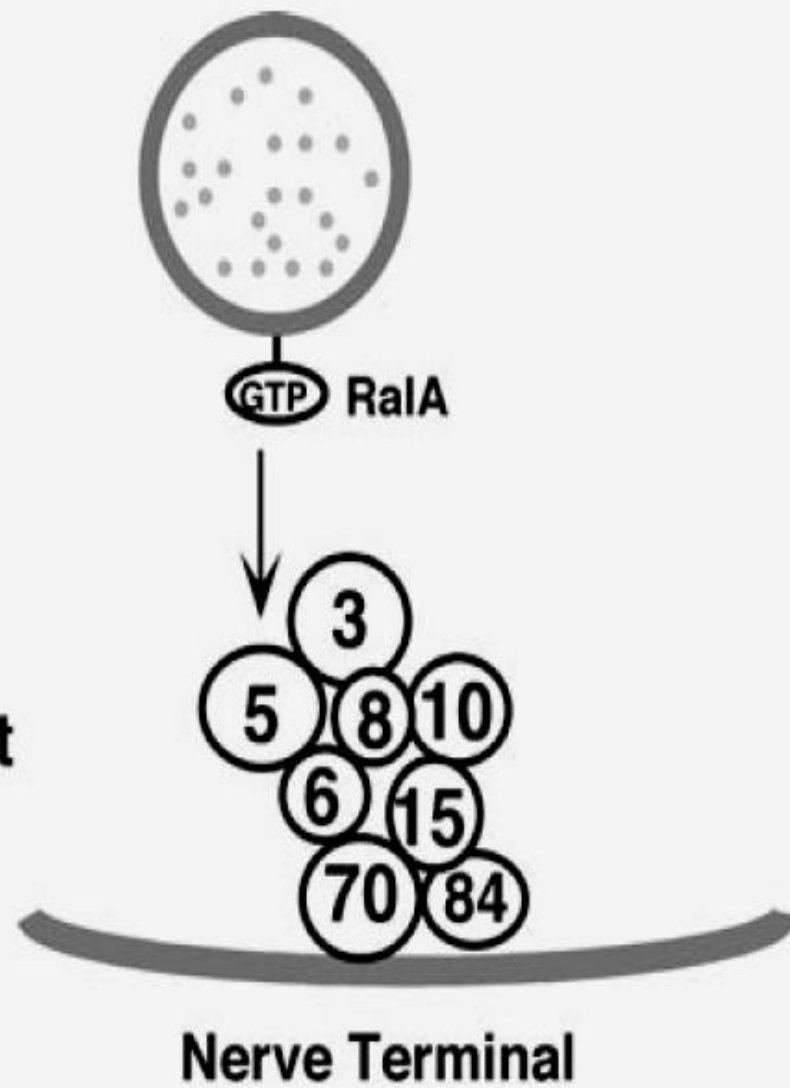
*Régulé vs constitutive*



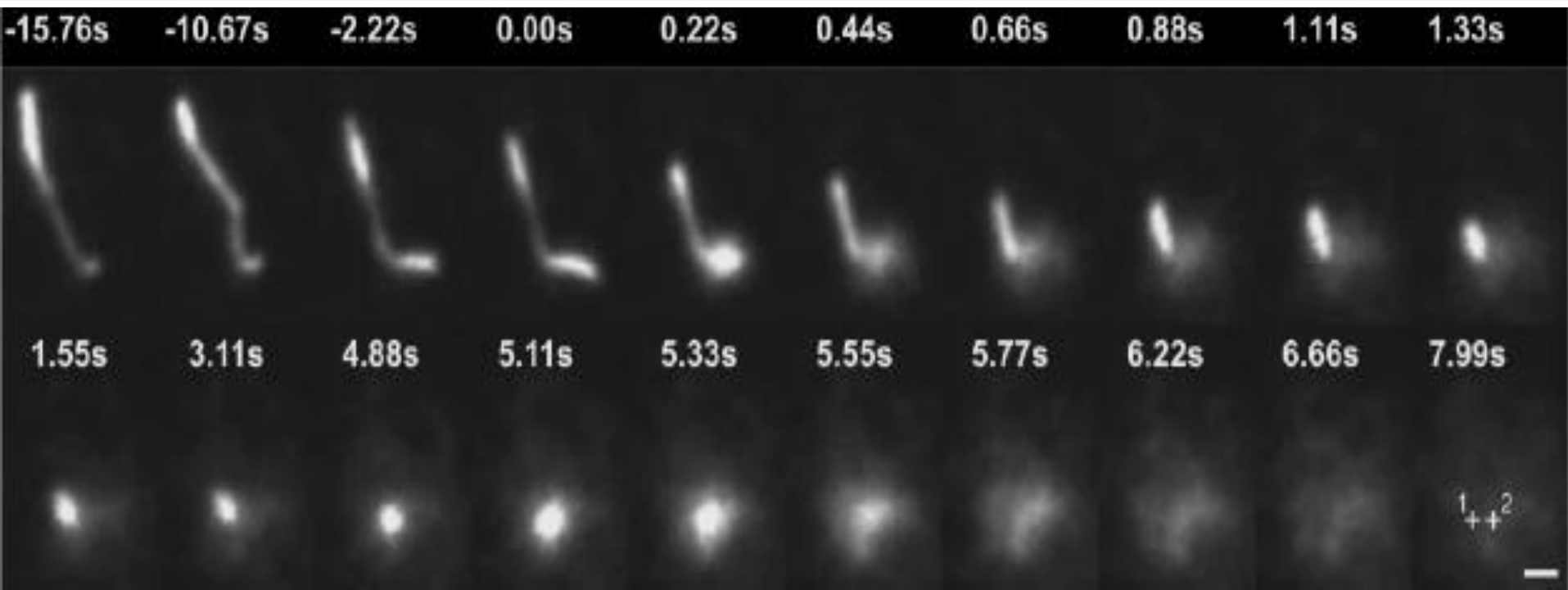
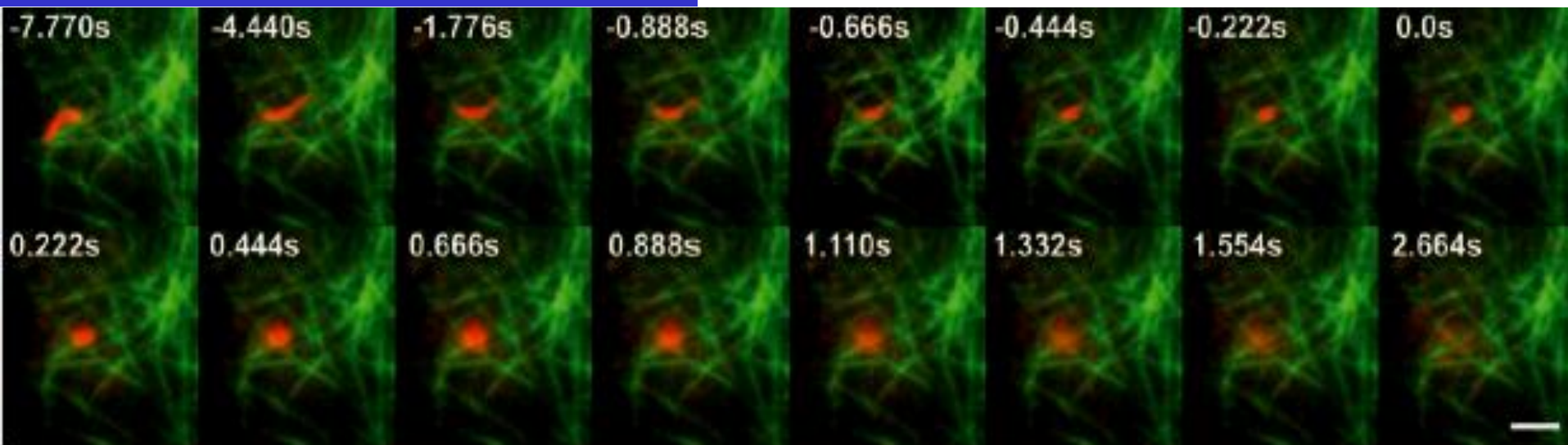
# Comment trouver le site? L'EXOCYSTE



Exocyst



# Transport: vésicules ou tubules?



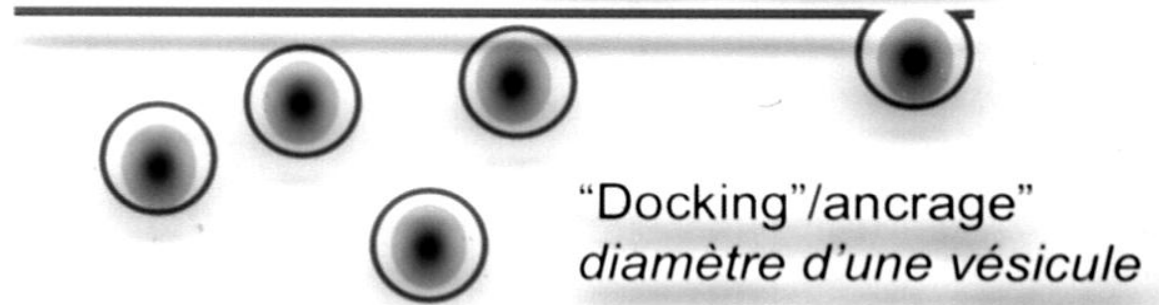
- Types et pools vésiculaires
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# SYSTEMES ET POOLS

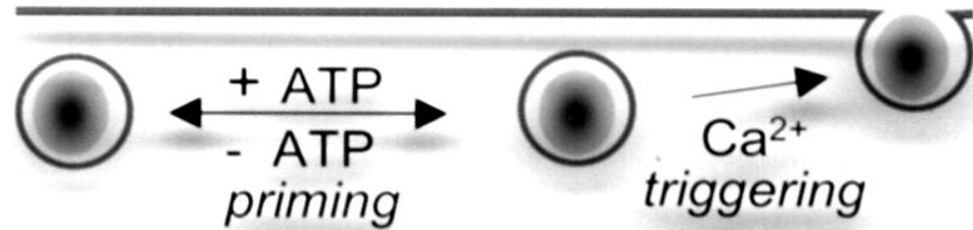
*les étapes et approches*

## ETAPES DE L'EXOCYTOSE/FUSION

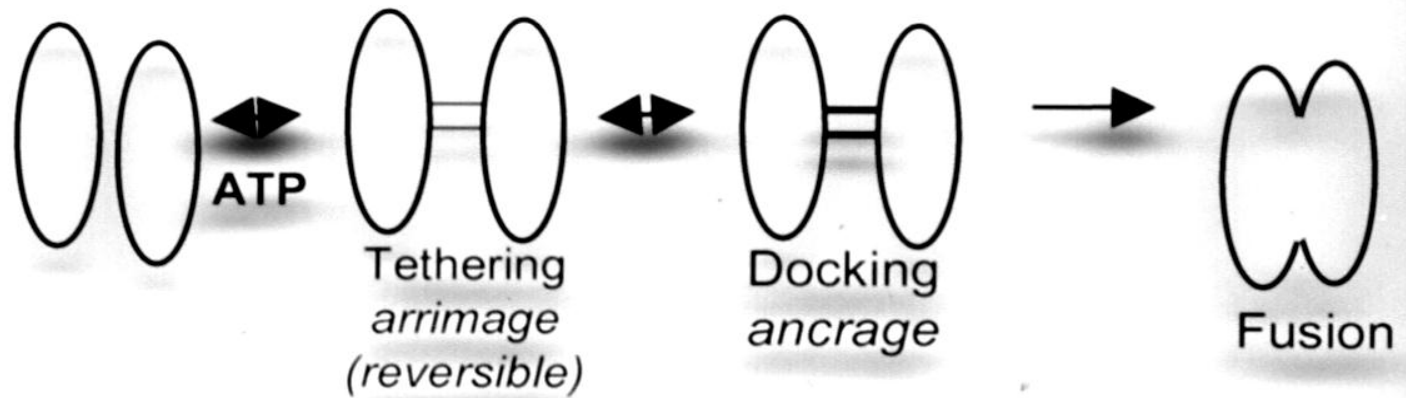
Morphologie



Biochimie/électrophys.

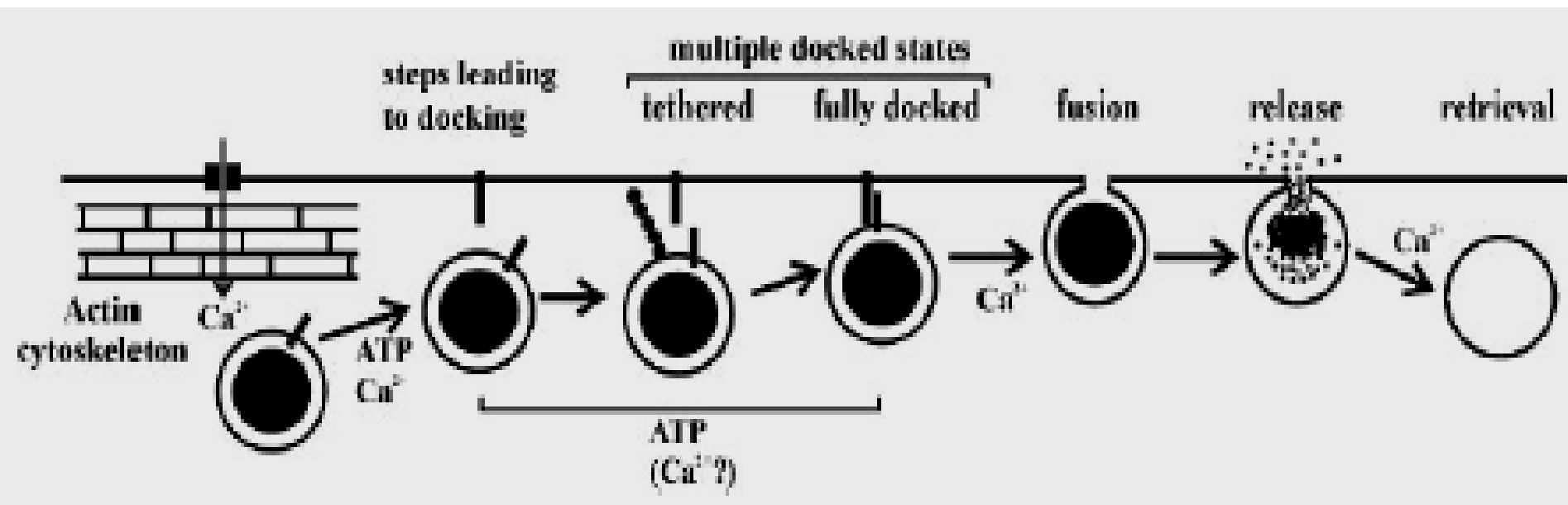


Levure  
vacuole



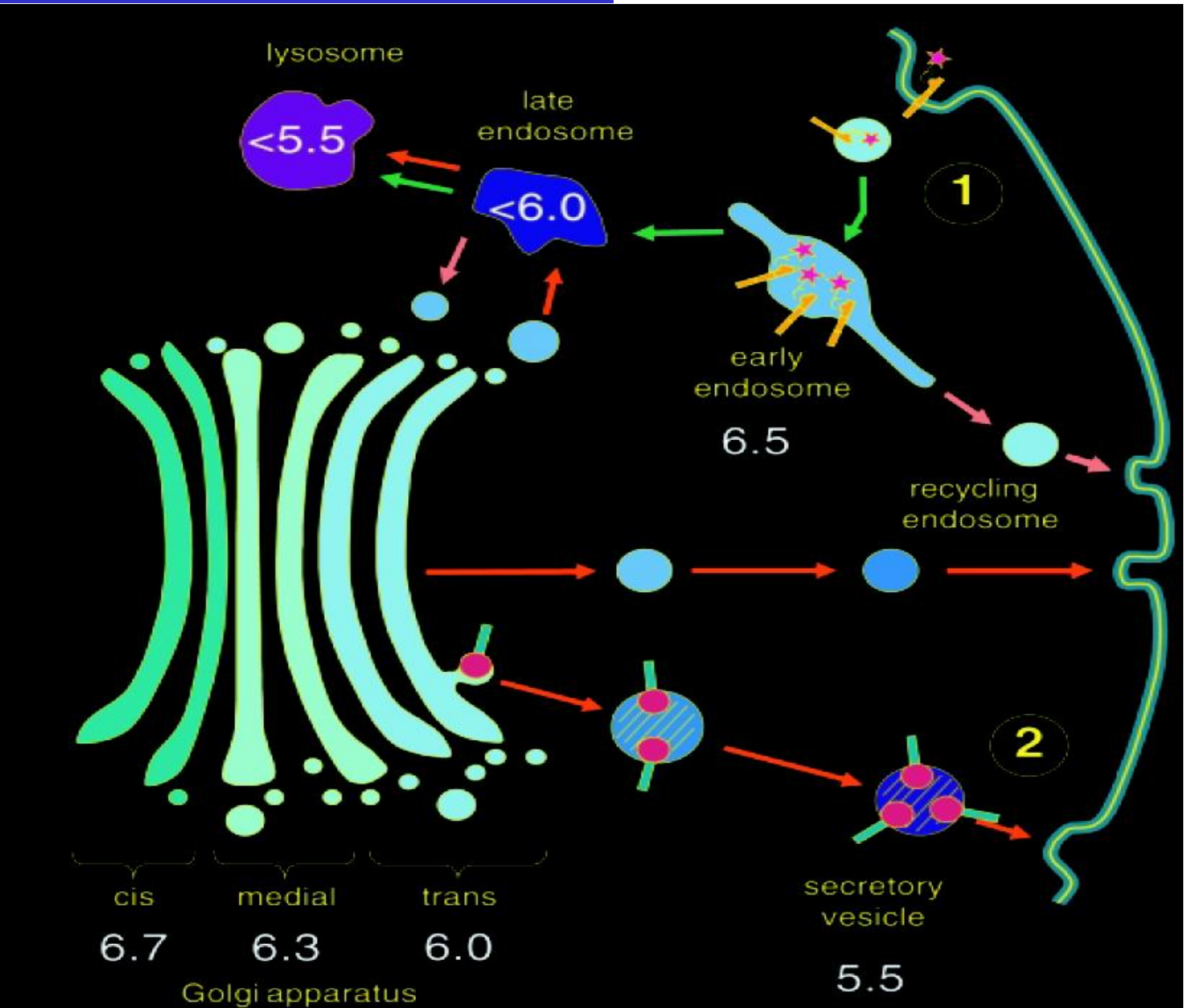


# Pools et étapes



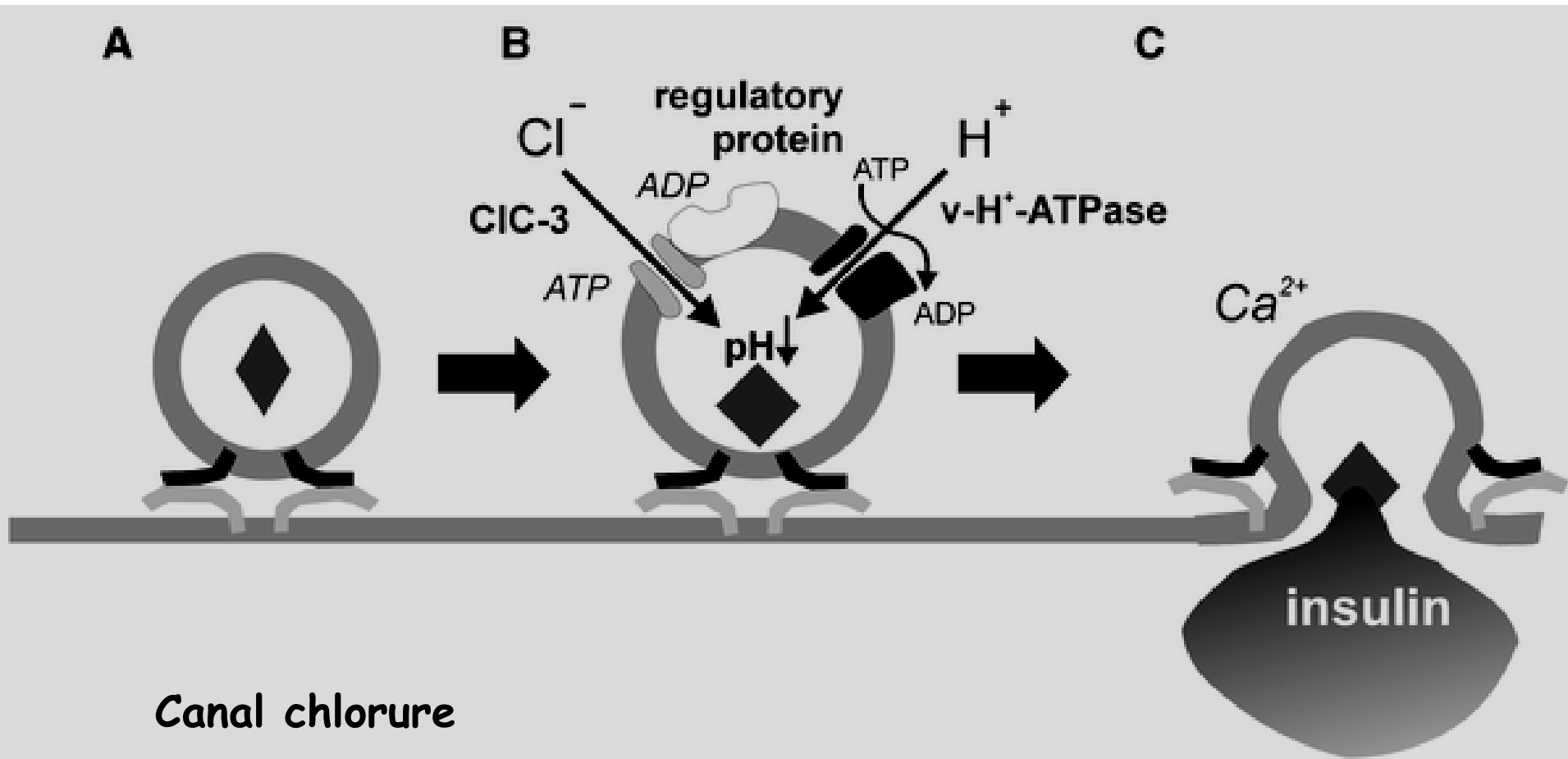
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# Vésicules et pH



# SYSTEMES ET POOLS

*pas simple d'exocytoser... le couplage électro-osmotique*



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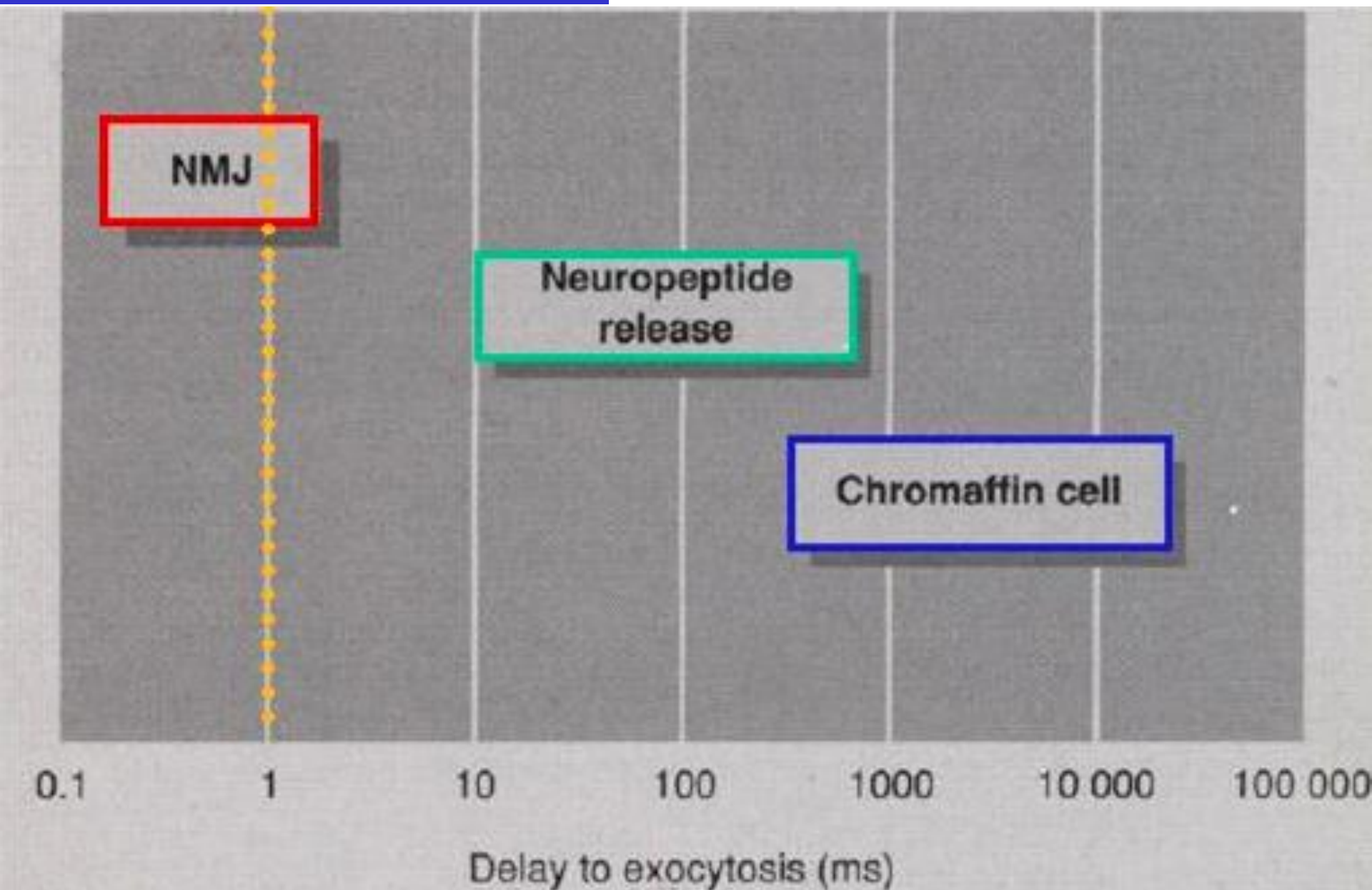
# SYSTEMES ET POOLS

*quelle vitesse?*

Capacitance or EPSC measurements <sup>a</sup>			
Exocytic times (ms) ( $\tau$ for RRP depletion)	Latency (ms)	Vesicle type	Reference
0,1–1	0,3–1	SV	[28,29] calyx of Held <sup>a</sup>
0,1	0,06	SV	[30] cerebellar synapse <sup>a</sup>
0,3	1,5	SV	[31] retinal bipolar neuron
1	0,5	SV	[32] inner hair cell
30	–	SV	[20] PC12 cell <sup>a</sup>
40	10	DCV	[33] melanotrope
7–27	50	DCV	[34–37] chromaffin cell
30	–	DCV	[38] gonadotrope
14–40	3	DCV	[39,40] post pituitary
85–2000	10–200	DCV	[41–45] pancreatic $\beta$ cell
8000–20,000	3000	DCV	[20,47,48] PC12 cell
Amperometry measurements			
Rise times (ms)	Mean open time (ms)	Vesicle type	Reference
0,6	0,09	SV	[18,19] Leech motoneuron
–	0,12	SV	[17] midbrain neuron
3,6	0,5	DCV	[18,19] Leech motoneuron
0,2–0,5	1–2	DCV	[46,51] PC12 cell
0,9	4–10	DCV	[34,48,49,50] chromaffin

# SYSTEMES ET POOLS

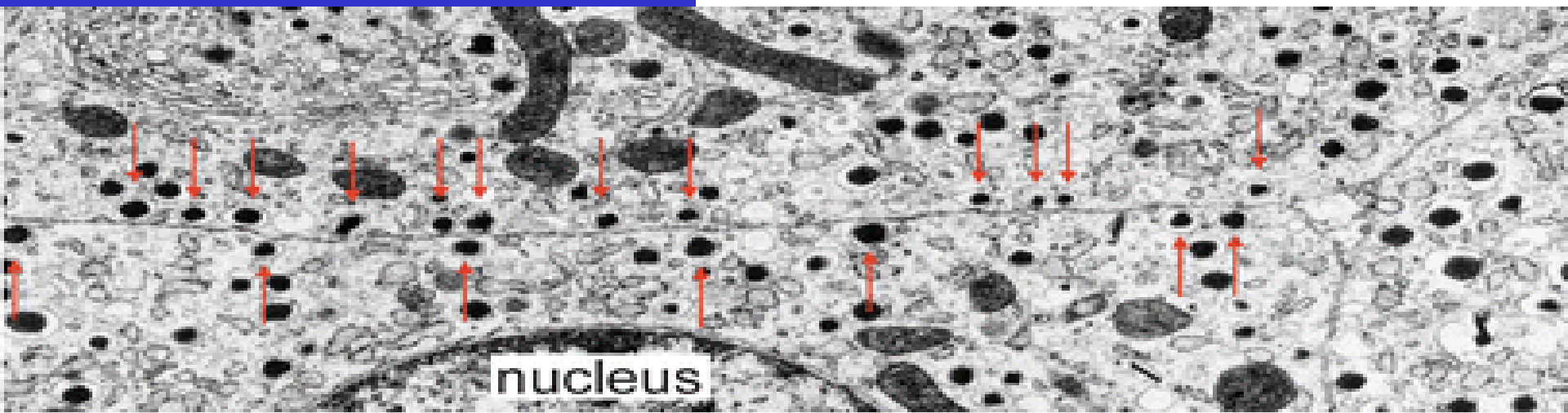
*quelles vitesses*



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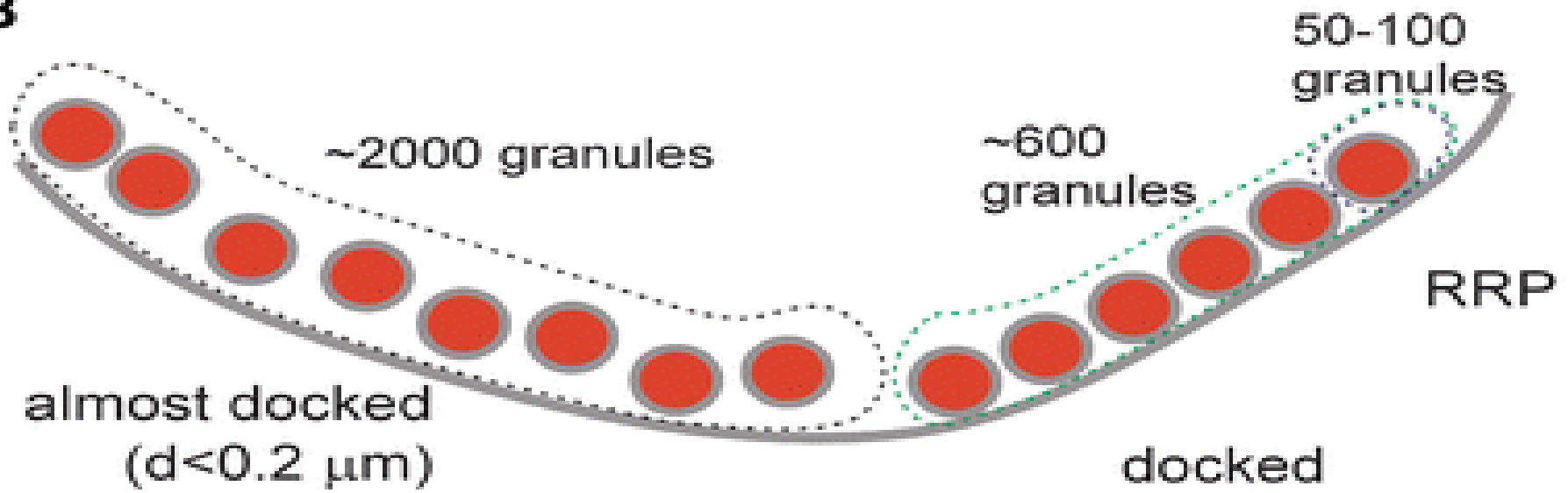


# SYSTEMES ET POOLS



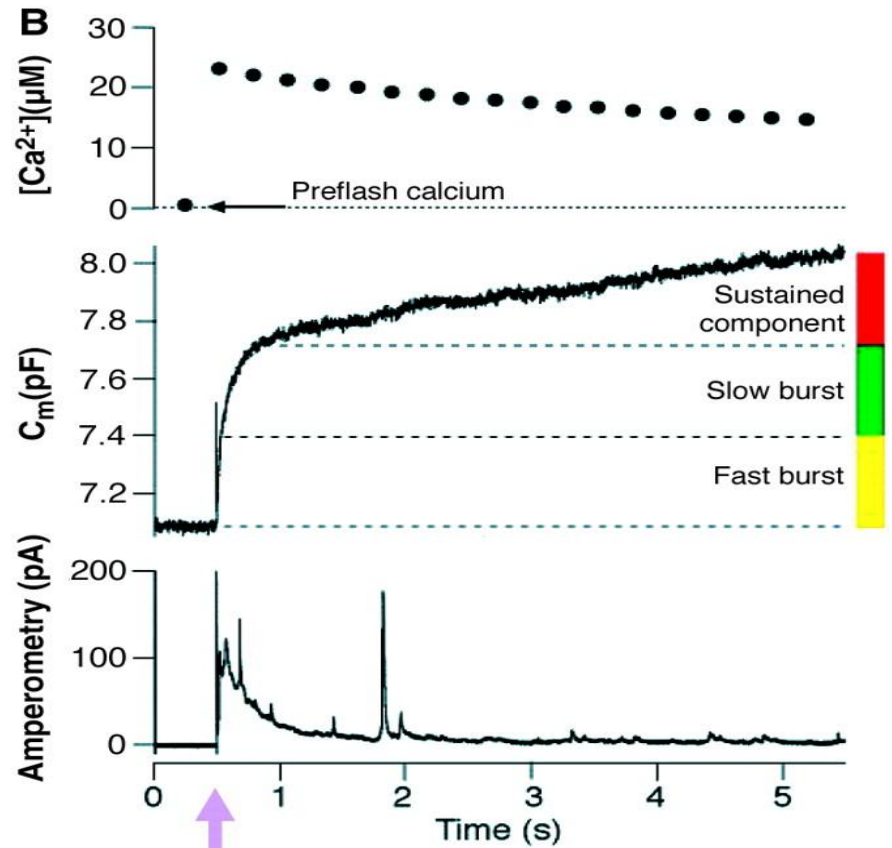
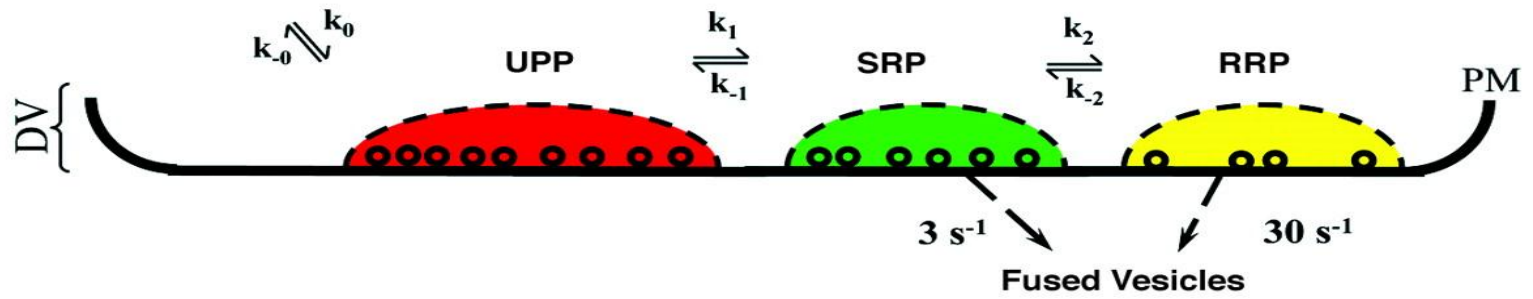
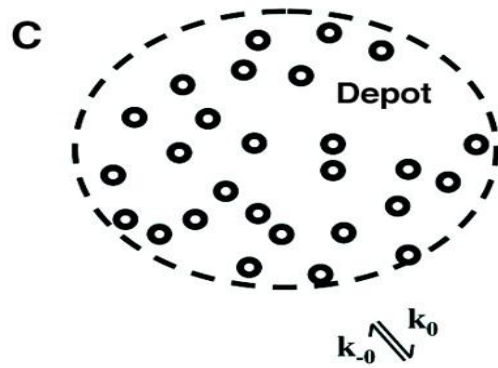
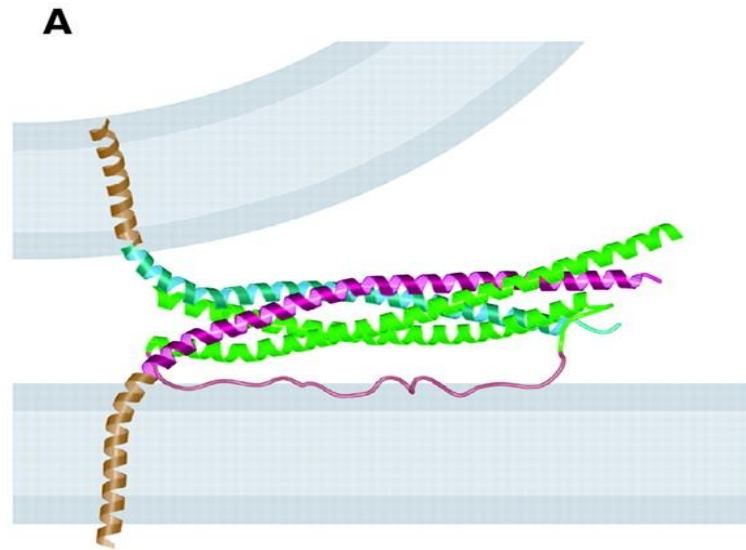
1  $\mu\text{m}$

**B**



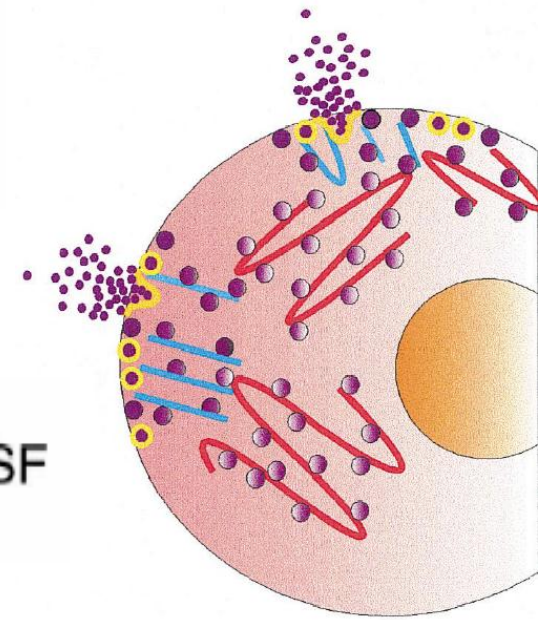
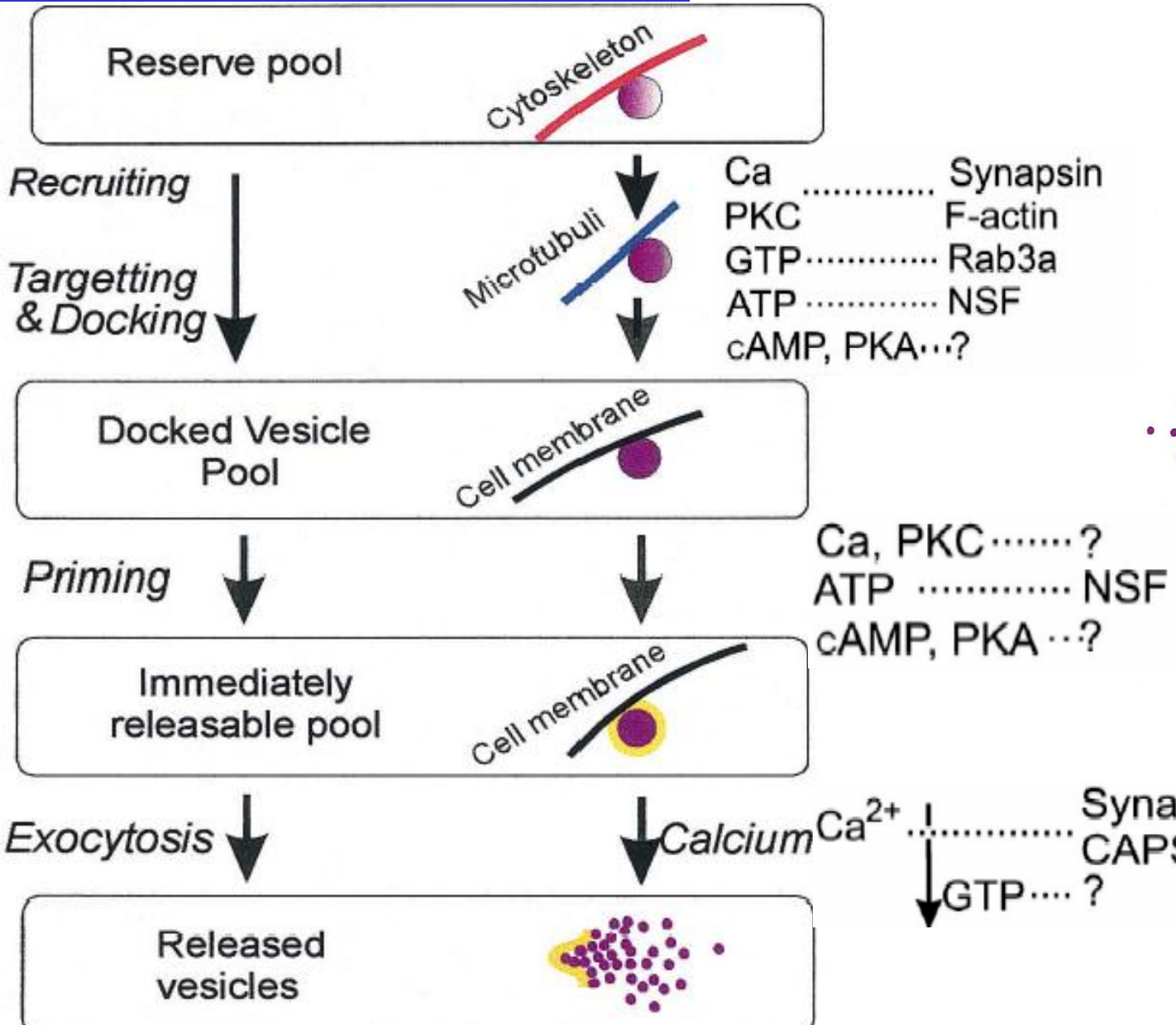
# SYSTEMES ET POOLS

## *les pools et leurs transitions*



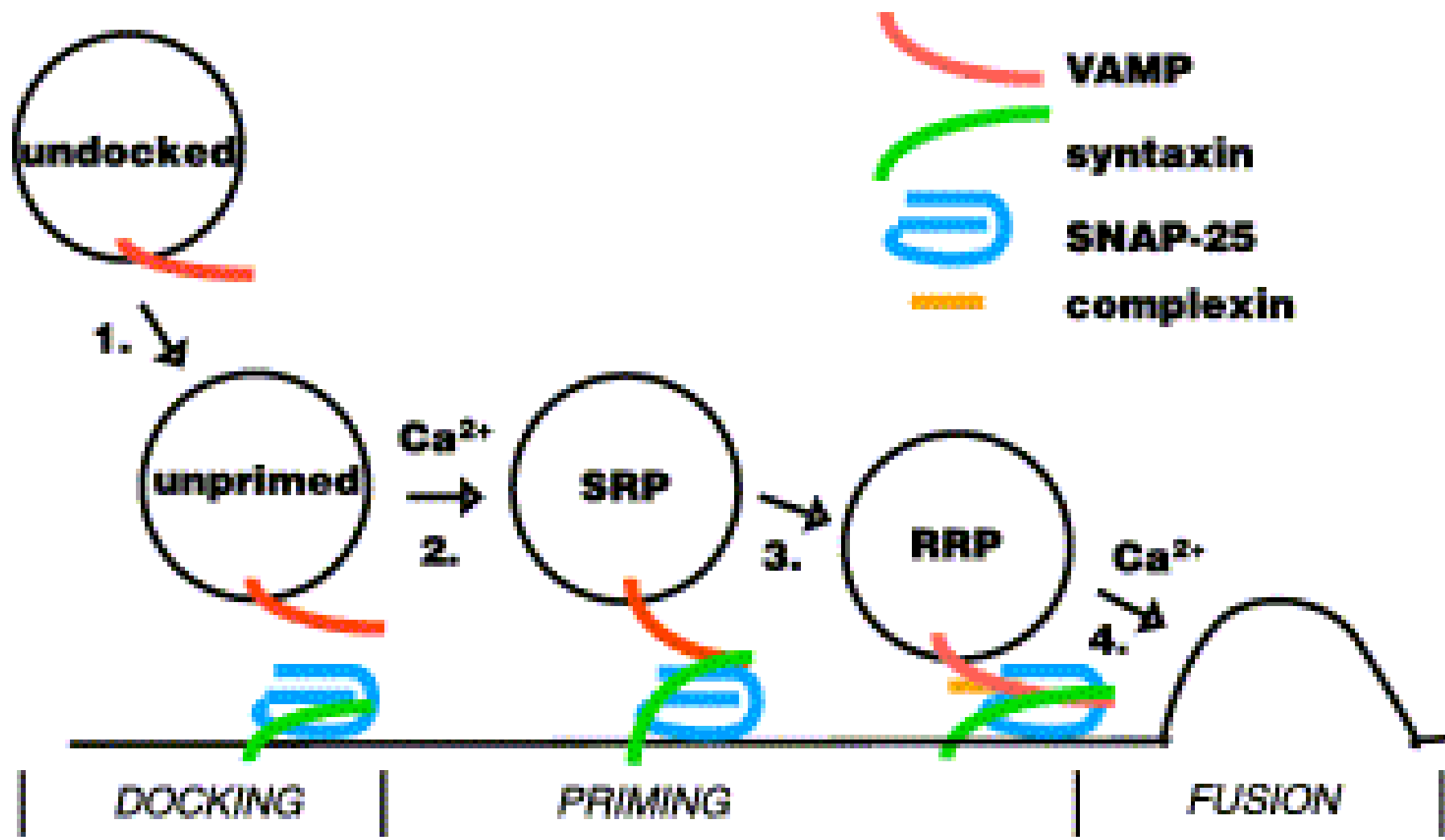
# SYSTEMES ET POOLS

## *l'interprétation moléculaire*



# SYSTEMES ET POOLS

*pools et SNAREs*



# SYSTEMES ET POOLS

## *caracteristiques*

Table 1 | **Characteristics of the vesicle pools**

Pool	Readily releasable pool (RRP)	Recycling pool	Reserve pool
Size (% of all vesicles)	~1–2%	~10–20%	~80–90%
Location	Docked	Scattered	Scattered (bulk of vesicle cluster)
Released within	<1 second	A few seconds	Tens of seconds, minutes
Recycling	Fast (seconds)	Fast (seconds)	Slow (minutes)
Mixing with other pools	Fast mixing with recycling vesicles	Slow mixing with reserve	Slow mixing with other vesicles
Mobility in resting terminals	None — docked	High	Low (high in bipolar cells)

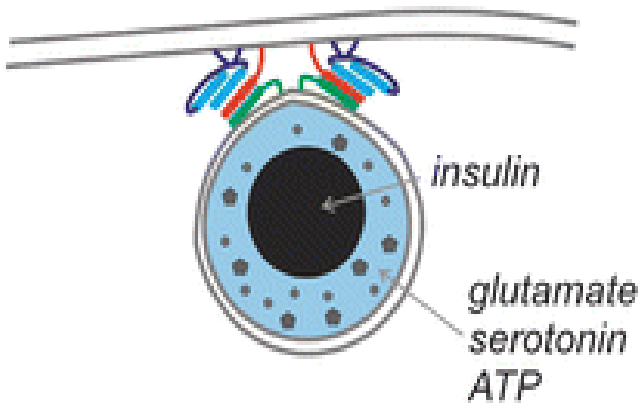
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# SYSTEMES ET POOLS

*dilatation graduelle - qu'est ce qu'on mesure?*

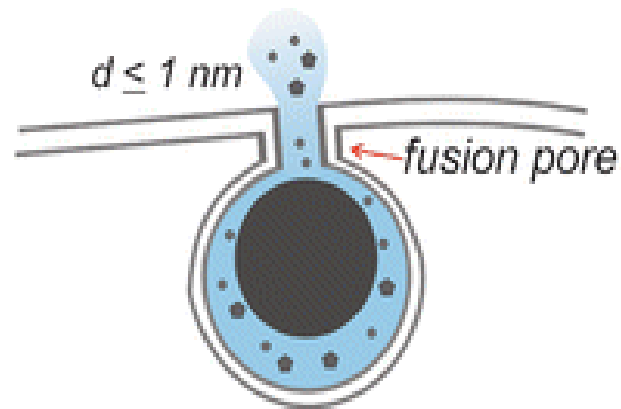
A

docked



B

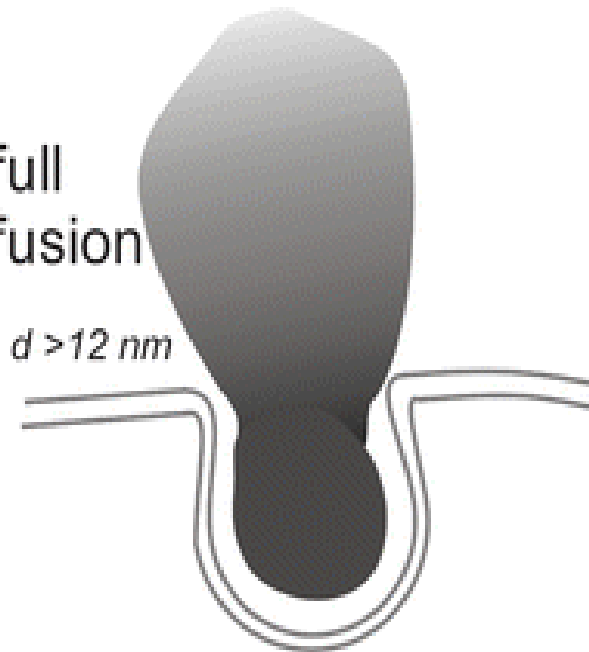
fused



C

full fusion

$d > 12 \text{ nm}$



- Types et pools vésiculaires
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