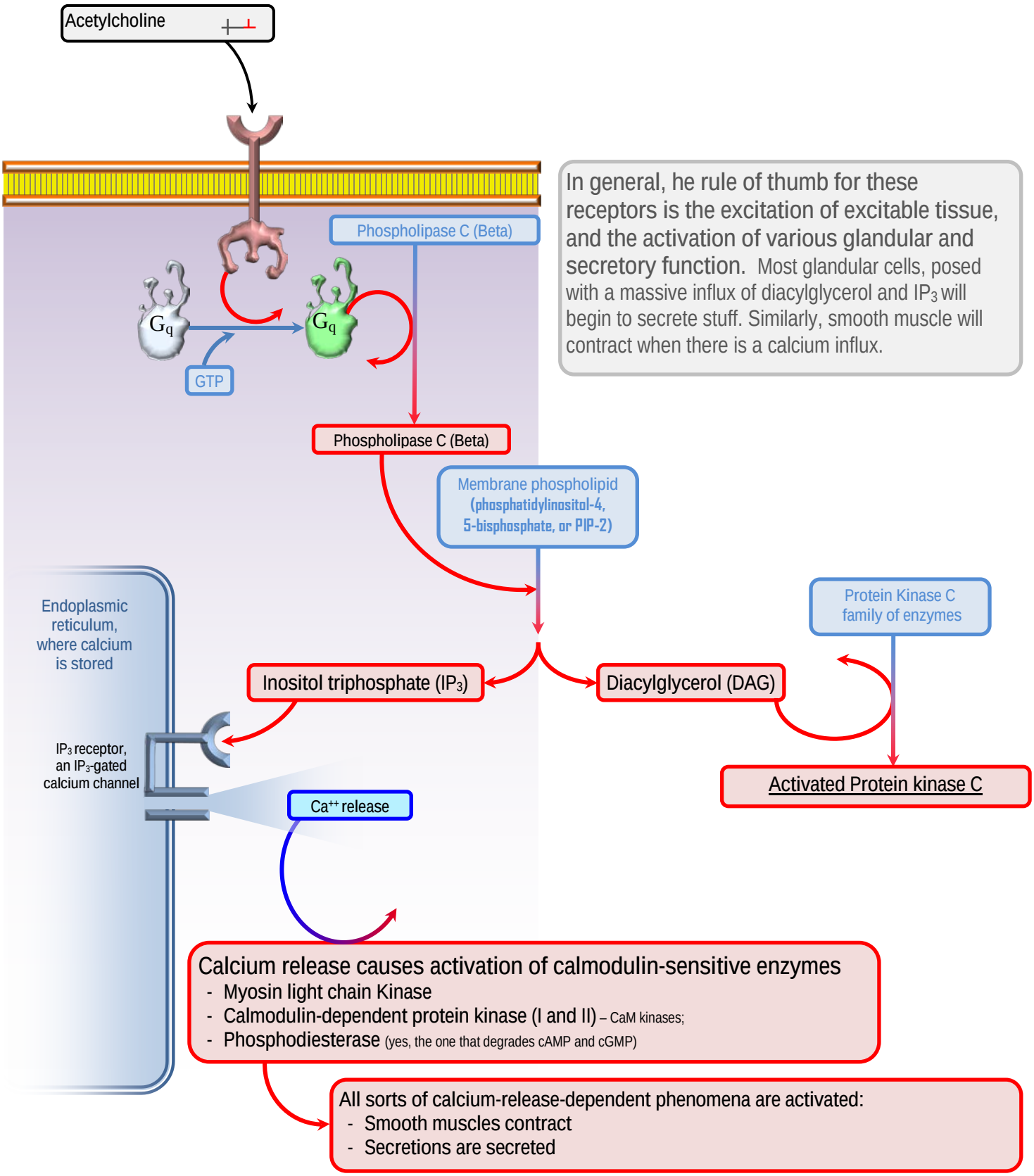
This document was created by Alex Yartsev (dr.alex.yartsev@gmail.com); if I have used your data or images and forgot to reference you, please email me.

Muscarinic M1, M3 and M5 acetylcholine receptor intracellular signalling pathway

M1, M3 and M 5 are G_q protein coupled: the second messenger is IP_3, and the result is calcium release



In general, he rule of thumb for these receptors is the excitation of excitable tissue, and the activation of various glandular and secretory function. Most glandular cells, posed with a massive influx of diacylglycerol and IP_3 will begin to secrete stuff. Similarly, smooth muscle will contract when there is a calcium influx.

Calcium release causes activation of calmodulin-sensitive enzymes
- Myosin light chain Kinase
- Calmodulin-dependent protein kinase (I and II) – CaM kinases;
- Phosphodiesterase (yes, the one that degrades cAMP and cGMP)

All sorts of calcium-release-dependent phenomena are activated:
- Smooth muscles contract
- Secretions are secreted

From Peck and Hill "Pharmacology for Anaesthesia and Intensive care" as well as the mighty "Handbook of Pharmacology and Physiology in Anaesthetic Practice" by Stoelting and Hillier. A