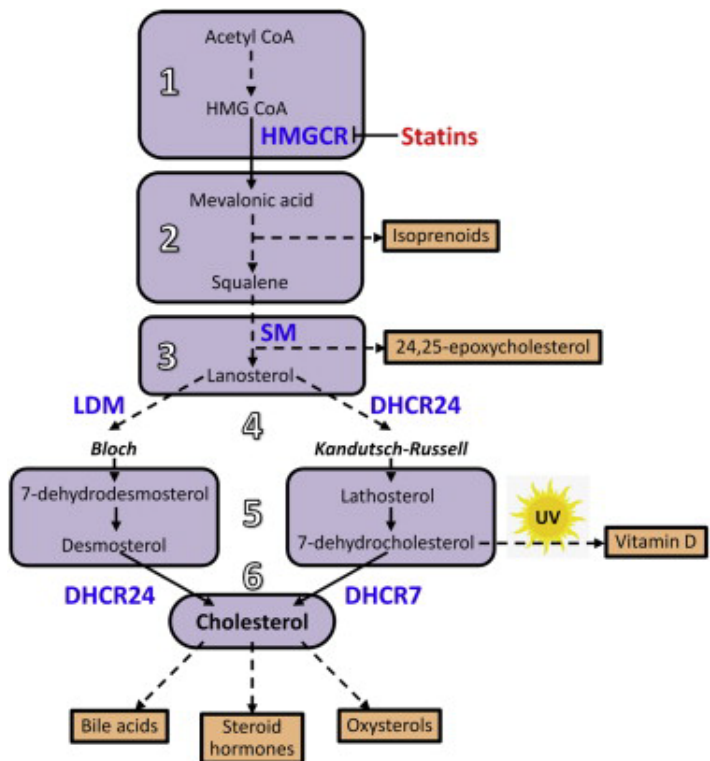


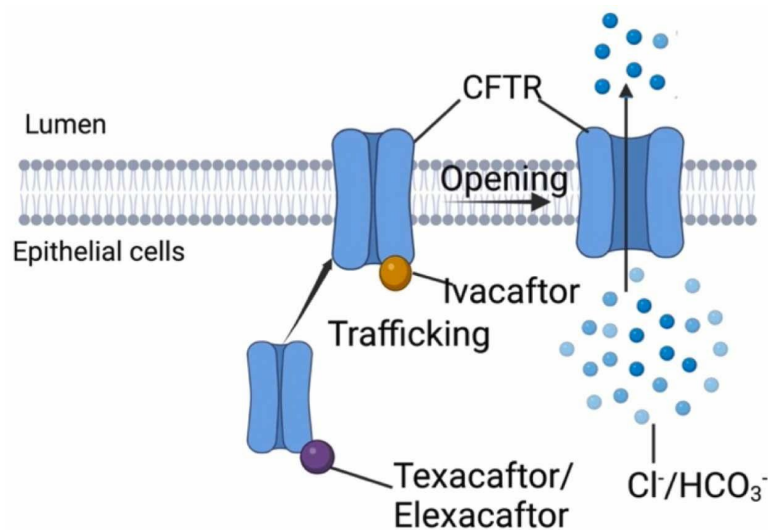
Basic research lays the **mechanistic foundation** for medical breakthroughs

cardiovascular disease



Statins inhibit HMG-CoA reductase, a rate controlling enzyme for cholesterol biosynthesis

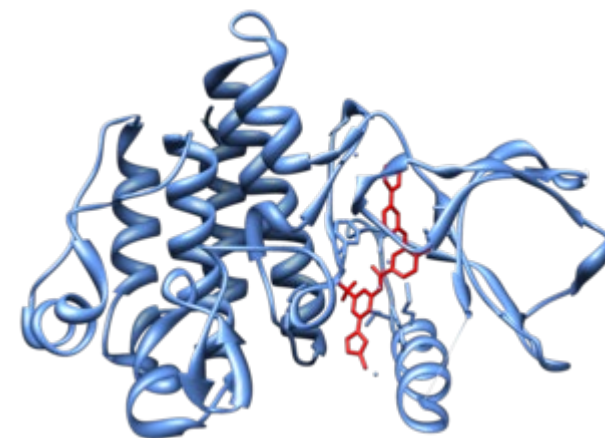
cystic fibrosis



gating mutations (G551D)
trafficking mutations (ΔF508)

Trikafta corrects these two main defects

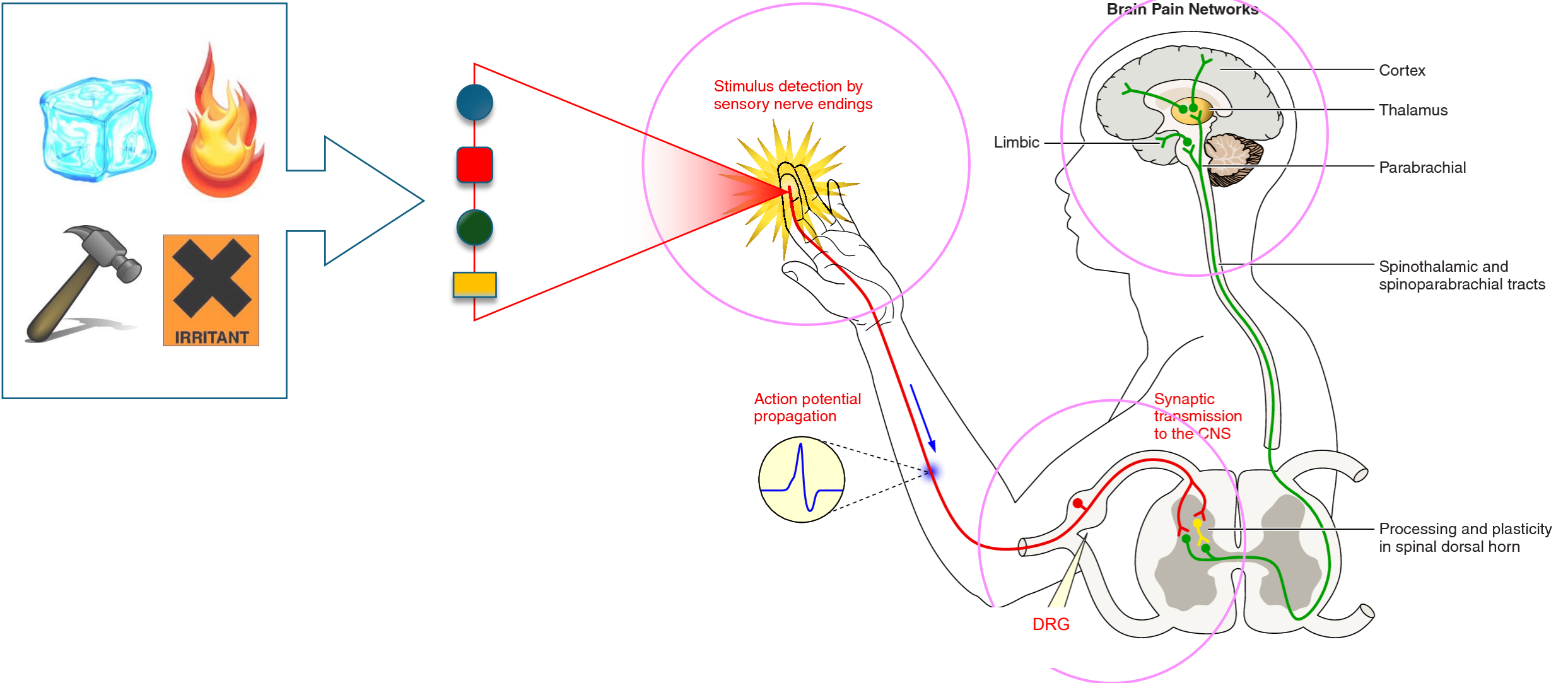
cancer



Gleevac inhibits the Abl kinase, which is aberrantly activated in CML

“... development of Gleevec taught scientists that by understanding the biology of a disease, it is possible to learn how to treat or cure that disease.”

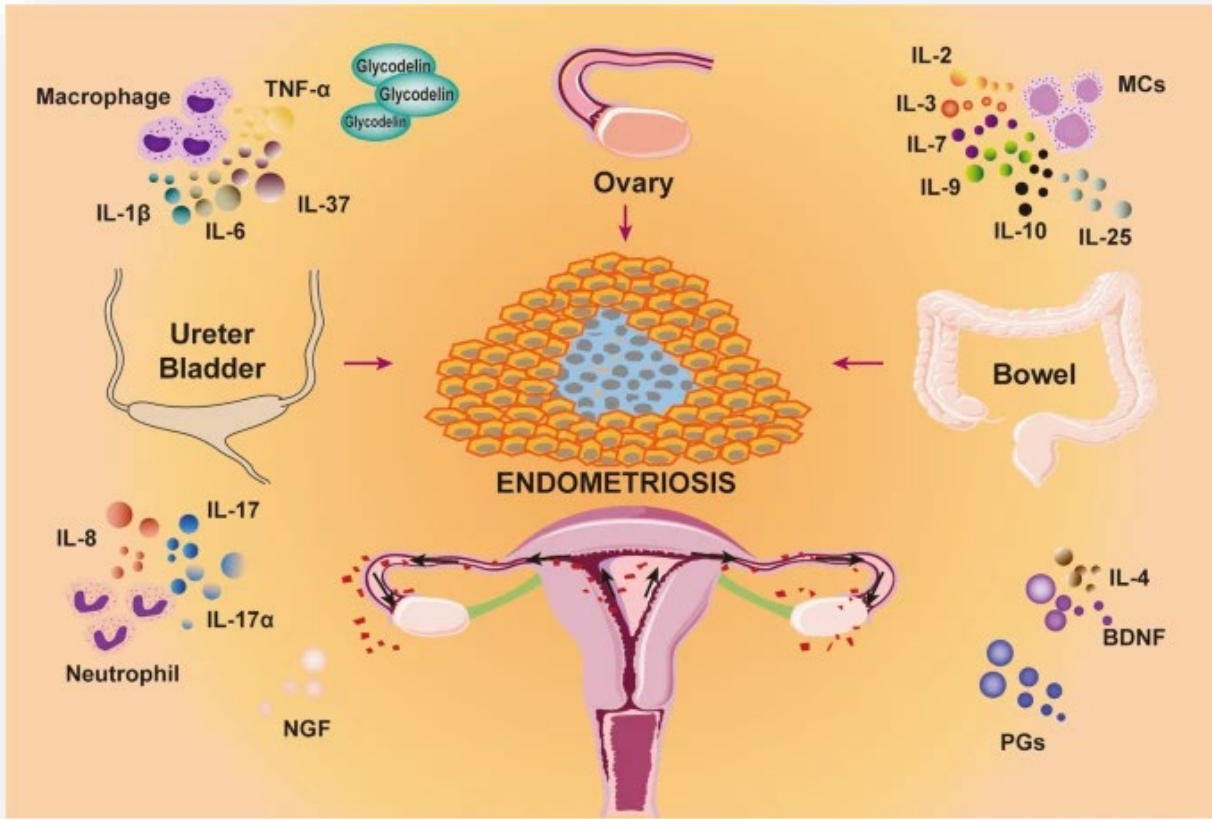
Challenge: develop analgesics that selectively target pain circuits



Chronic pain – clinically and mechanistically distinct syndromes



Mechanistic insights into visceral pain (IBS or endometriosis)

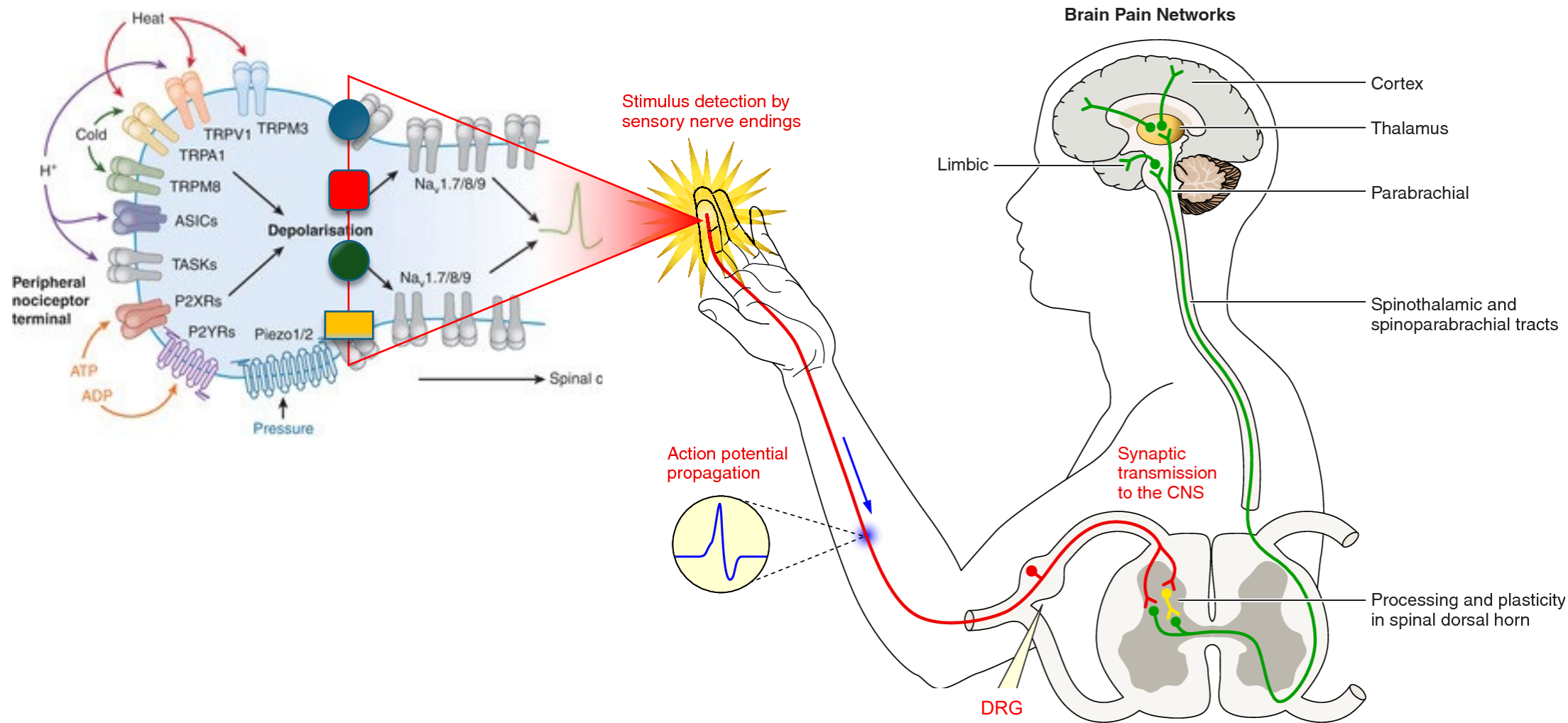


Wei et. al. *J. Neuroinflamm.* 2020

Gut Enterochromaffin Cells Drive Visceral Pain and Anxiety
Bayrer et. al. *Nature* 2023

Nociceptor-to-macrophage communication through CGRP/RAMP1 signaling drives endometriosis-associated pain and lesion growth in mice
Fattori et. al. *Sci. Trans. Med.* 2024

Basic mechanistic insights are transforming our understanding of acute and chronic pain



adapted from Bourinet et al. 2014
and St. John Smith and Lee 2023