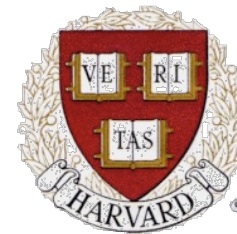


Neurobiologic aspects of preventing acute and chronic pain

Clifford Woolf





No Plasticity - Nociception



Reversible Plasticity - Sensitization

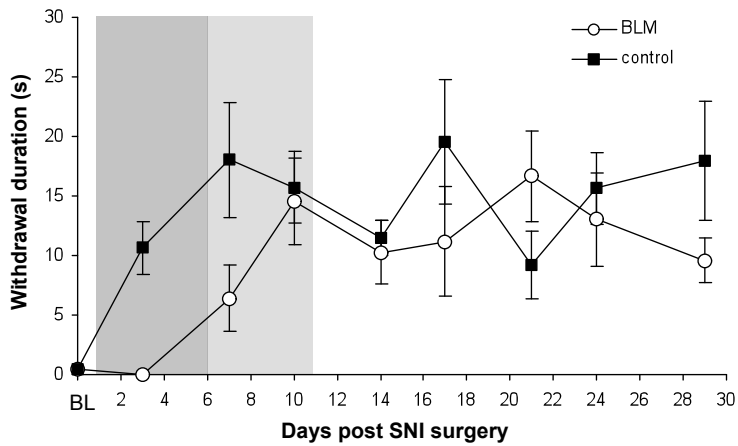


Irreversible Plasticity

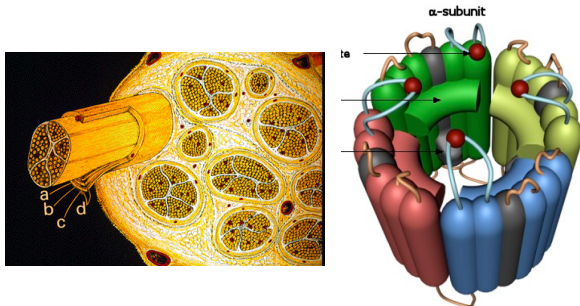
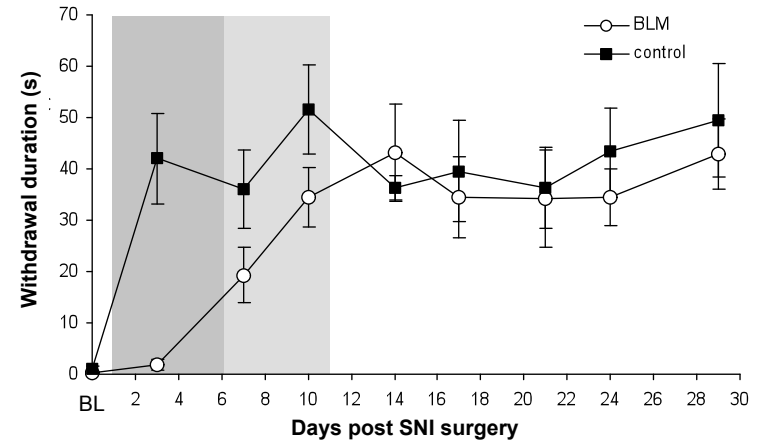
Time

Bupivacaine – Voltage-gated sodium channels

Sural nerve territory – mechanical hyperalgesia



Sural nerve territory – cold hyperalgesia



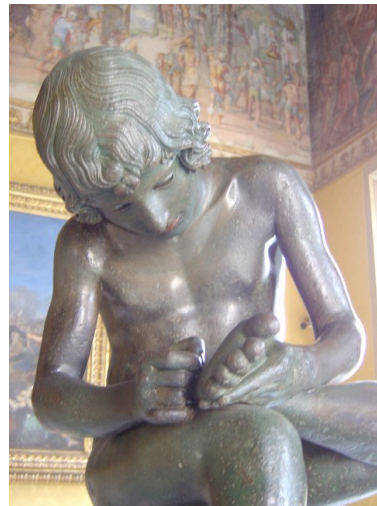
Development of Neuropathic Pain in the Rat Spared Nerve Injury Model Is Not Prevented by a Peripheral Nerve Block

Marc R. Suter, M.D.,* Michael Papalouzos, M.D.,† Charles B. Berde, M.D., Ph.D.,‡ Clifford J. Woolf, M.D., Ph.D.,§
Nicolas Gillard, M.D.,|| Donat R. Spahn, M.D.,# Isabelle Decosterd, M.D.**

Anesthesiology 2003

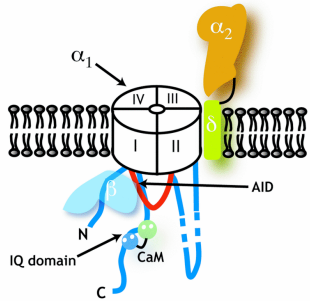
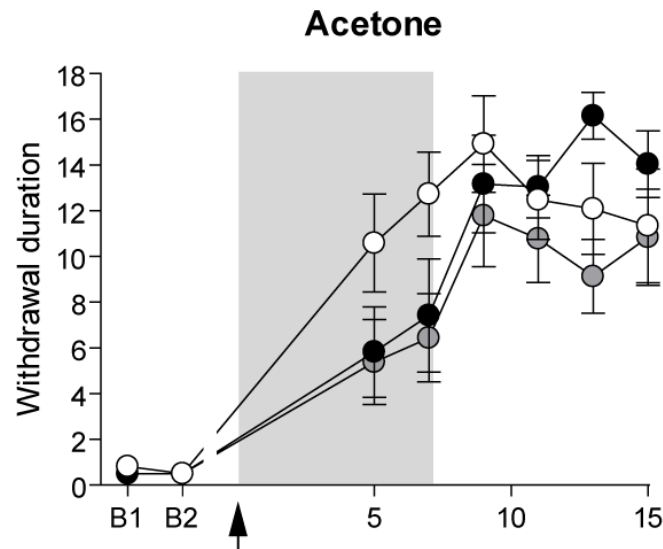
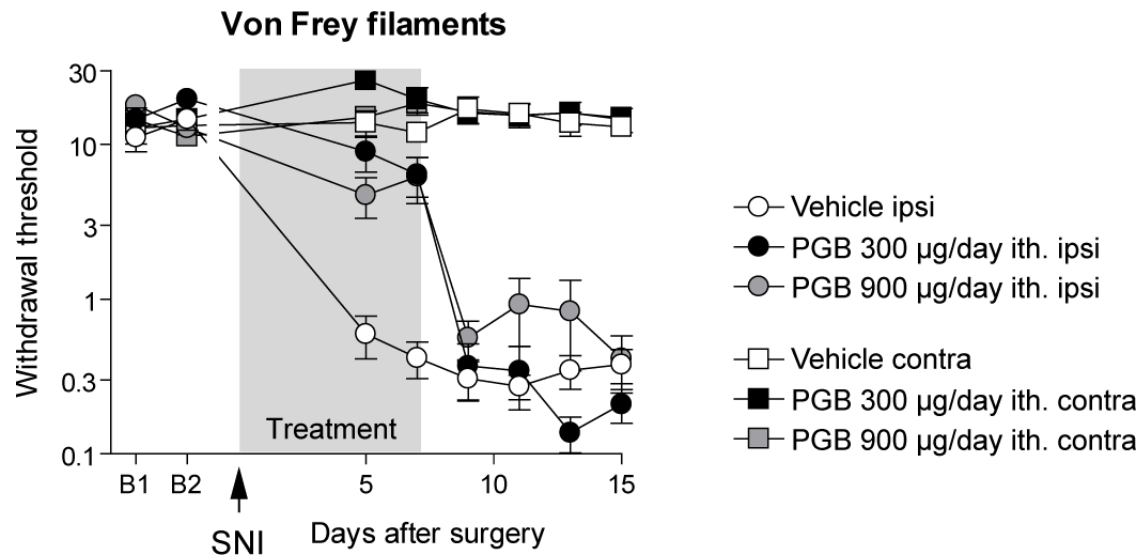


Thorn in the foot model of pain



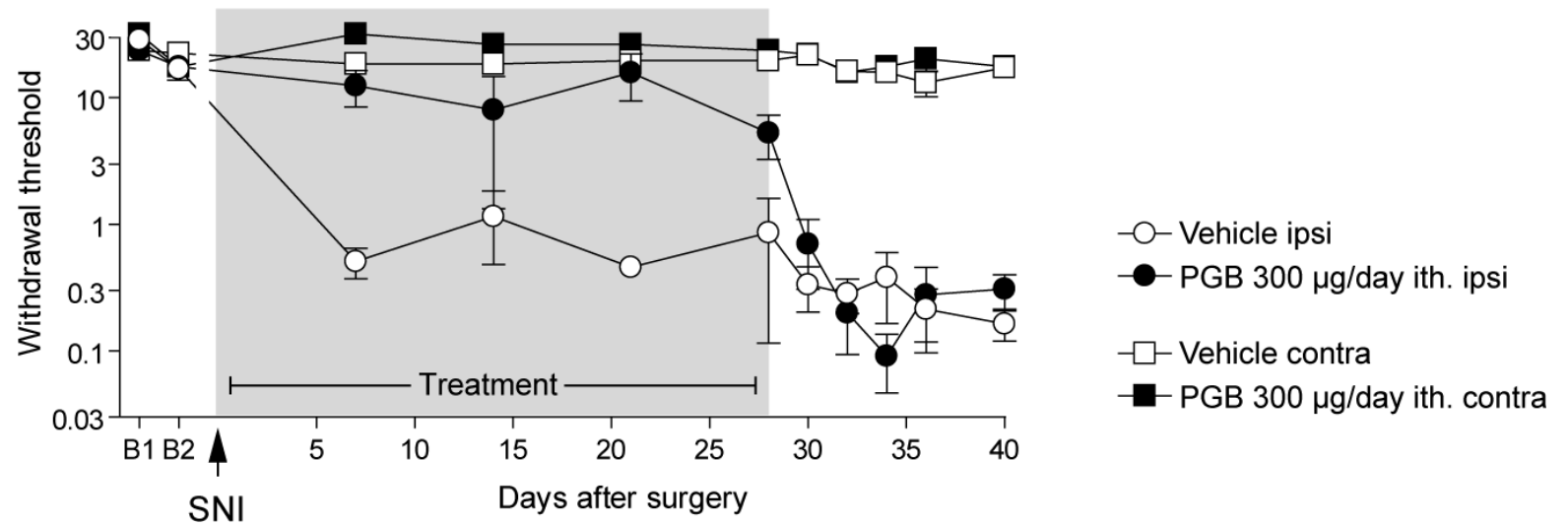
Symptom control

Pregabalin – A2D3 - VGCC

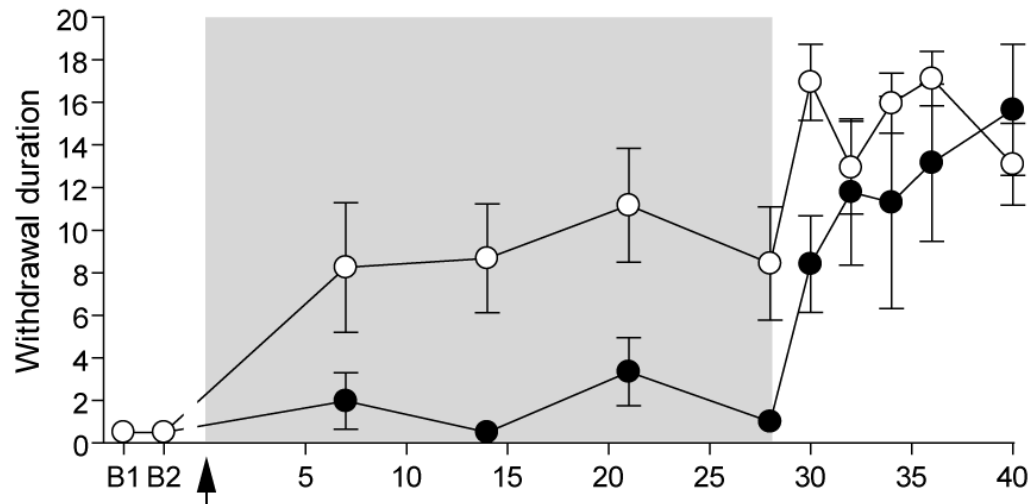


Pregabalin – A2D3 - VGCC

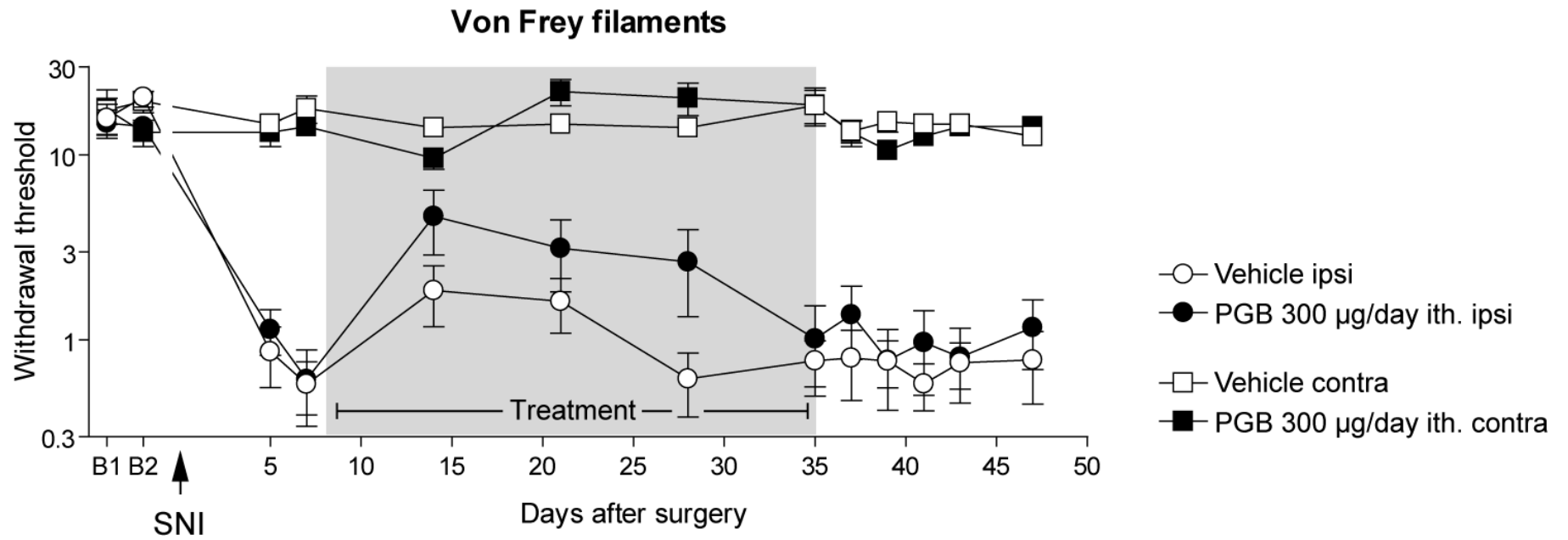
Von Frey filaments



Acetone



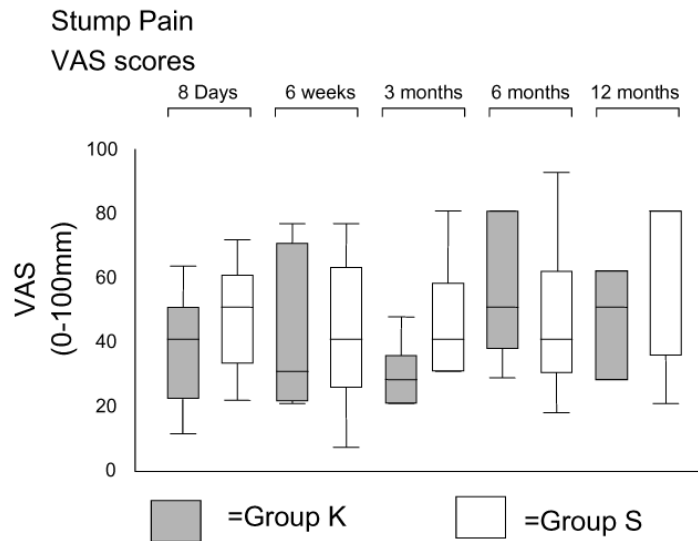
Pregabalin – A2D3 - VGCC





Central Sensitization

“Pre-emptive analgesia” PK – PD mismatch



Pain 135 (2008) 108–118

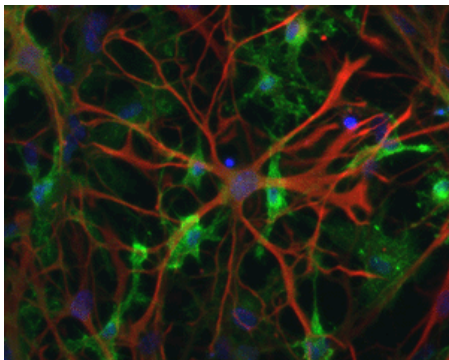
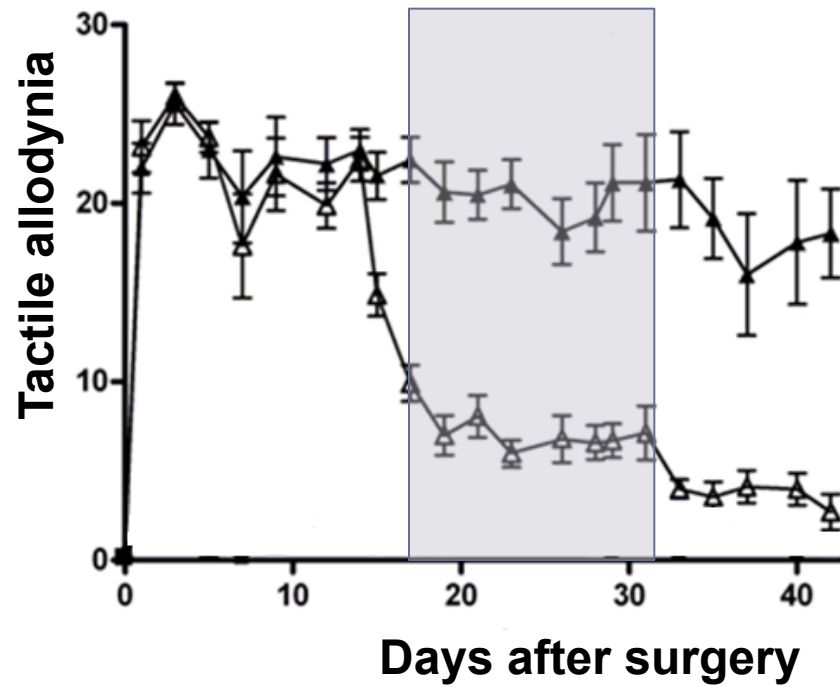
PAIN

www.elsevier.com/locate/pain

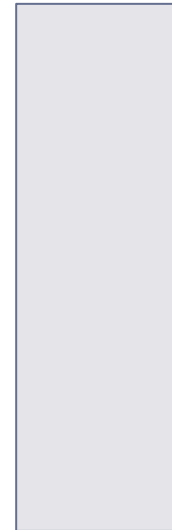
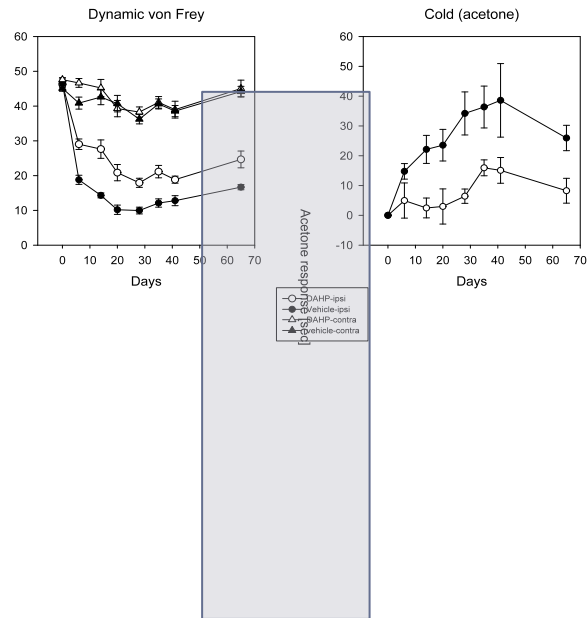
A randomised double blind trial of the effect of pre-emptive epidural ketamine on persistent pain after lower limb amputation

John A. Wilson ^a, Alastair F. Nimmo ^a, Susan M. Fleetwood-Walker ^b,
Lesley A. Colvin ^{c,*}

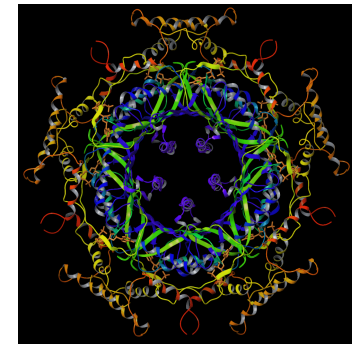
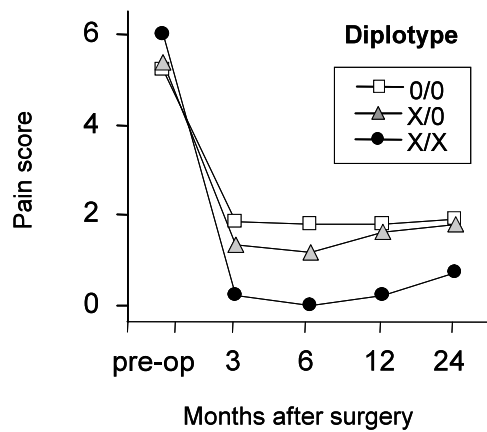
Propentofylline – Glial cell modulator



Diaminohydroxypyrimidine GCH1 inhibitor

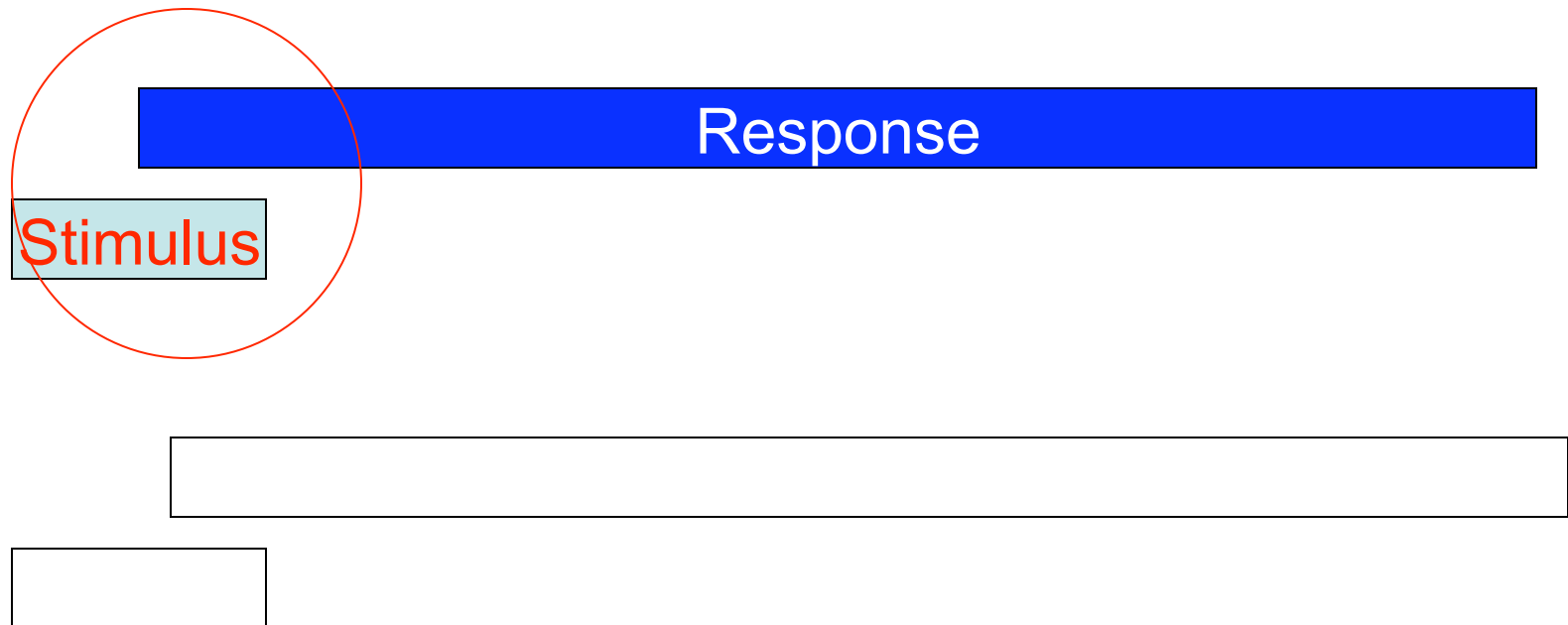


Frequency of "leg pain"



Irmgard Tegeder In Prep 2009

Transition State - Acute to Chronic Pain



Not Conventional Analgesics But Transition State Blockers

Preventative Analgesia – Disease Modifying

British Journal of Anaesthesia **100** (1): 36–41 (2008)
doi:10.1093/bja/aem338 Advance Access publication November 27, 2007

BJA

CLINICAL PRACTICE

Pre-incisional epidural ropivacaine, sufentanil, clonidine, and (S)+-ketamine does not provide pre-emptive analgesia in patients undergoing major pancreatic surgery^{†‡}

**A. Gottschalk^{1 2*}, M. Freitag², E. Steinacker², S. Kreißl², C. Rempf^{1 2}, H.-J. Staude⁴,
T. Strate³ and T. Standl^{2 5}**