

## NeuroDigm GEL™ Model 3Rs Chart

A Refined Humane Neuropathic Pain Model

**REFINEMENTS:** No incisions, no surgery; less pain, distress, and suffering; less tissue damage; reduction in lasting harm; improved welfare; less veterinary and technician care. **REDUCTION:** Less rodents used.

MODELS:	Neuropathic pain behavior	Anesthesia post induction w/ isoflurane	Mimics tissue healing	Skin/muscle surgical incision	Bone fracture	Neurectomy and/or nerve ligation	Post operative care	Acute pain post op days 1–14	Change in gait/posture; limb deformity	Risk of self-mutilation of paw/digits**	Biologic reversal of pain behavior	Reduce sample size of future studies***
NeuroDigm GEL™*	+	2 min.	+	–	–	–	–	–	–	–	+	+
Spinal nerve ligation (SNL)	+	10 min.	–	+	+	+	+	+	+	–	–	+
Chronic constriction injury (CCI)	+	15 min.	–	+	–	+	+	+	+	+	–	–
Spared nerve injury (SNI)	+	5 min.	–	+	–	+	+	+	+	+	–	–

\* U.S. Patents 7015371, 7388124

\*\* Paw/Digit Mutilation:

SNI: Koplovitch P, Minert A, Devor M, "Spontaneous pain in partial nerve injury models of neuropathy and the role of nociceptive sensory cover", *Experimental Neurology* 2012.

CCI: 1.) Colleoni M, Sacerdote P, "Murine models of human neuropathic pain", *Biochimica et Biophysica Acta* 2010. 2.) Jaggi AS, Jain V, Singh N, "Animal models of neuropathic pain", *Fundamentals of Clinical Pharmacology* 2011.

\*\*\* Reduction achieved since the stability of pain behavior enables screening of multiple drugs over weeks to months.

**National Centre for the Replacement Refinement & Reduction of Animals in Research, NC3Rs, UK:** "Methods that minimise the pain, suffering, distress or lasting harm that may be experienced by the animals. Refinement applies to all aspects of animal use, from the housing and husbandry used to the scientific procedures performed on them."

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