

Preclinical Neuropathic pain models (mouse and rat)



Neuropathic pain induced by chemotherapy

||| in vivex

Chemotherapy-induced peripheral neuropathic pain (CIPN) is one of the most frequent side effects caused by antineoplastic agents.

In rodents, single or repeated cisplatin injections induce peripheral neuropathy mimicking human disorder and allowing to study the efficacy of new pharmacological candidates in chemotherapy-induced hearing loss and peripheral neuropathy.



Day 1

Day 4

Mechanical and thermal Neuropathic pain

Pain

Neuromuscular strength

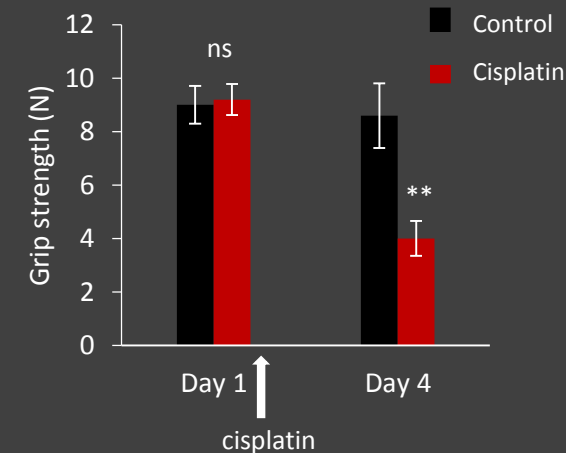
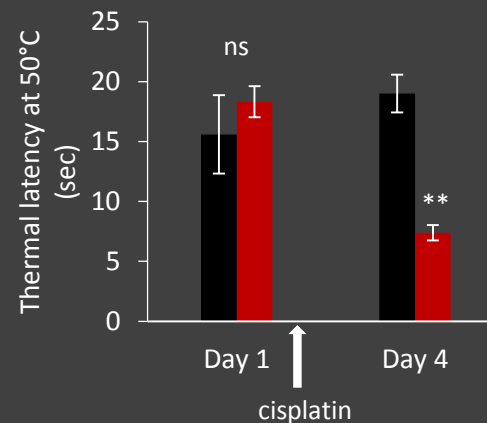
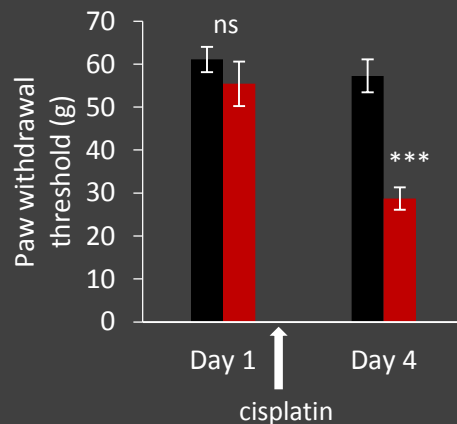
Mechanical pain (von Frey test)

Thermal pain (thermal gradient test)

Grip test

Our validation data demonstrate an increase of mechanical and thermal neuropathic pain and decrease of neuromuscular strength three days after cisplatin treatment.

This is a robust and reproducible rat model allowing to determine the efficacy of new pharmacological candidates targeting chemotherapy induced neuropathic pain.





Diabetic neuropathic pain

Diabetic neuropathy is the most common complication of diabetes and one of the leading causes of pain, axonal degeneration and retinopathy. The db/db strain is used to model phases I to III of diabetes type II and obesity. These mice manifest similar human diabetic disorders such as elevated plasma insulin, neuropathic pain, morbid obesity, chronic hyperglycemia, pancreatic beta cell atrophy, peripheral neuropathy, hearing loss, retinopathy and myocardial disease.



Mechanical and thermal Neuropathic pain

4 months old

5 months old

6 months old

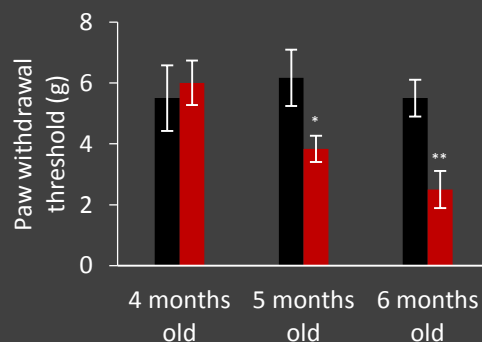
Sacrifice

Our validation data demonstrate mechanical and thermal pain hypersensitivity and decrease of the walking performances and the number of intraepidermal nerve fibers in diabetic mice at 5 and 6 months old.

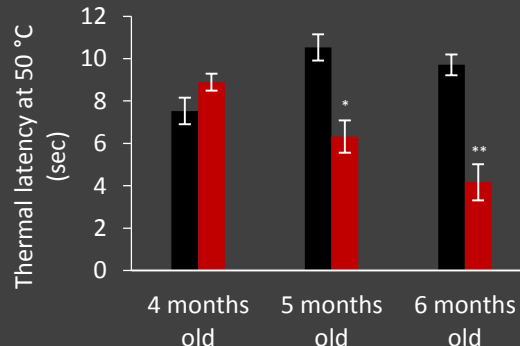
This model allows to determine the efficacy of new pharmacological candidates targeting peripheral neuropathy induced by diabetes. This model closely mimics the diabetes disorders such as neuropathic pain, blindness and peripheral nervous system demyelination observed in humans.

Pain

Mechanical pain (Von Frey test)



Thermal pain (Thermal gradient test)

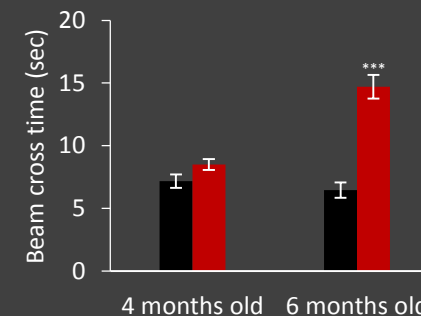


■ Control
■ Diabetic



Walking performances

Balance beam

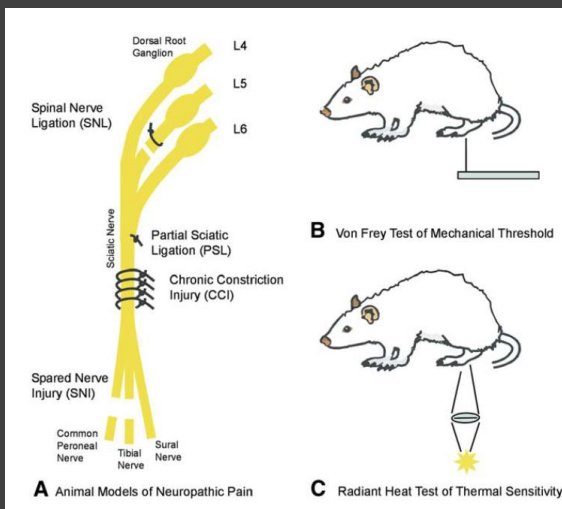


Intraepidermal nerve fibers histology





Nerve injury neuropathy (Neuropathic pain by CCI)



Sciatic nerve injury



Mechanical and thermal Neuropathic pain



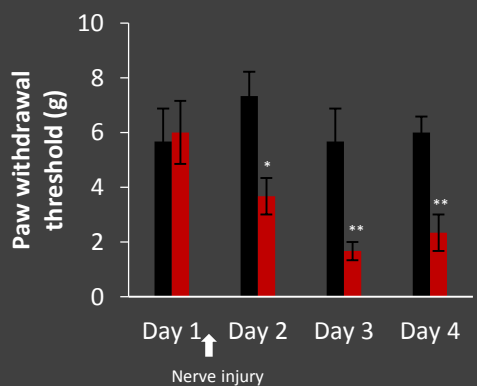
Our validation data demonstrate mechanical and thermal pain hypersensitivity and decrease of walking performances and sciatic nerve conduction velocity (data not shown) three days after sciatic nerve injury.

This model allows to determine the efficacy of new pharmacological candidates targeting peripheral neuropathic pain and demyelination at the different phases of the neuropathy : initiation, progression (acute phase) and maintenance (chronic phase).

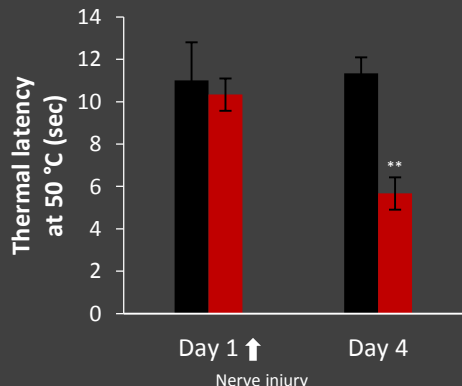
Pain

Walking performances

Mechanical pain (Von Frey test)



Thermal pain (thermal gradient test)



Balance beam

