

Ending Chronic Pain

Precision Pump Modulators (PPMs)
**a novel class of non-opioid
pain medicines**

About Dolinnov

Toward a world where every patient has access to safe and effective treatments for chronic pain.

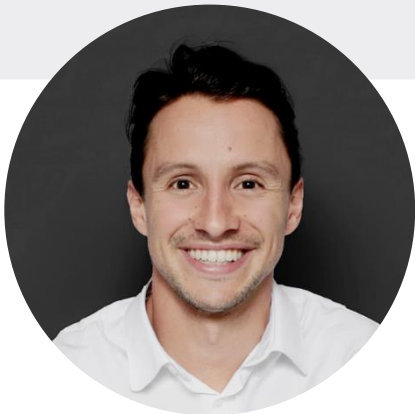
- Developing Precision Pump Modulators (PPMs), a novel class of non-opioid medicines
- Modulating ion pump function rather than blocking ion channels
- Reducing pathological nerve activity while preserving normal sensory function
- Broad applicability across multiple chronic pain indications
- **Raising Series A financing to advance our lead candidate into the clinic and expand into additional high-need indications**



A dedicated team of complementary talents

MANAGEMENT TEAM

Grégoire Serra
CEO



- Double degree – Scientific and legal expertise
- 5 years BD&L at Inserm Transfert
- Broad experience in pharmaceutical partnerships & company creation

Dr. Stéphanie Venteo
Scientific founder



- PhD in Neuroscience
- Leading a research group at INSERM – INM
- 25 years of expertise in physiology and pathology of the somatosensory system –especially in chronic pain

Dr. Jean Philippe Annereau
CSO



- PhD in Medicinal chemistry
- 30 years of expertise in the pharmaceutical industry
- Former CEO of Alexion R&D France & Pierre Fabre Oncology & CSO of AtmosR
- CEO of Medetia Pharmaceuticals

SAB



Dr. Jordi Serra
Expert in microneurography



Clifford Woolf
World Leader in Pain Neurobiology



Dr. Ben Johnston
Clinical Expert in Pain & Neuromodulation



Pr. Nadine Attal
International Expert in Pain



Dr. Leen Thielemans
Chief Development Officer



Pr. Céline Greco
Expert in Rare Pain Disorders





**“Access to Pain Management
is a Fundamental Human Right.”**

Declaration of Montreal. September 3, 2010

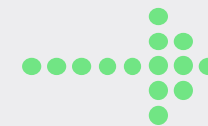
Chronic pain: a heavy burden on people and society

30%

Of the global population affected

Defined as pain persisting for **3+ months**.
The only effective medicines, **opioids are highly addictive**

The Lancet. May 27, 2021



It can be done

First approval of a new class of
non-opioid pain therapy in more
than two decades



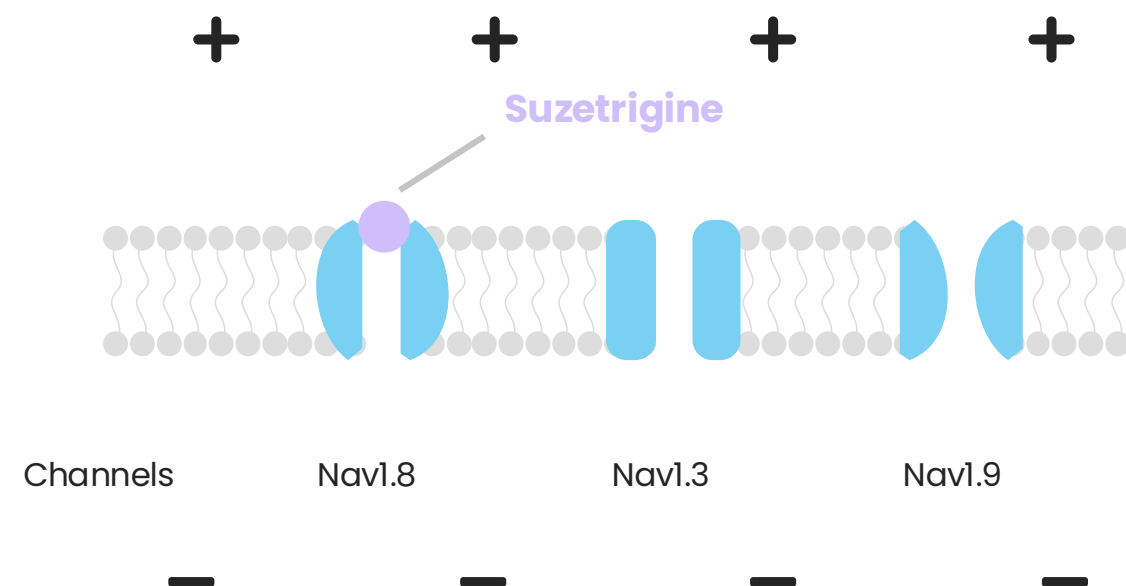
"Vertex scores FDA nod for
long-awaited non-opioid
pain reliever **Journavx**"

Jan 30, 2025



Not there yet: compensation of ion channels

Several different ion channels are expressed in the dorsal root ganglion with overlapping functions. When one channel is blocked, others can take over its function (compensation).



We need a better target

Specific to chronic pain
Peripheral mechanism
No compensation

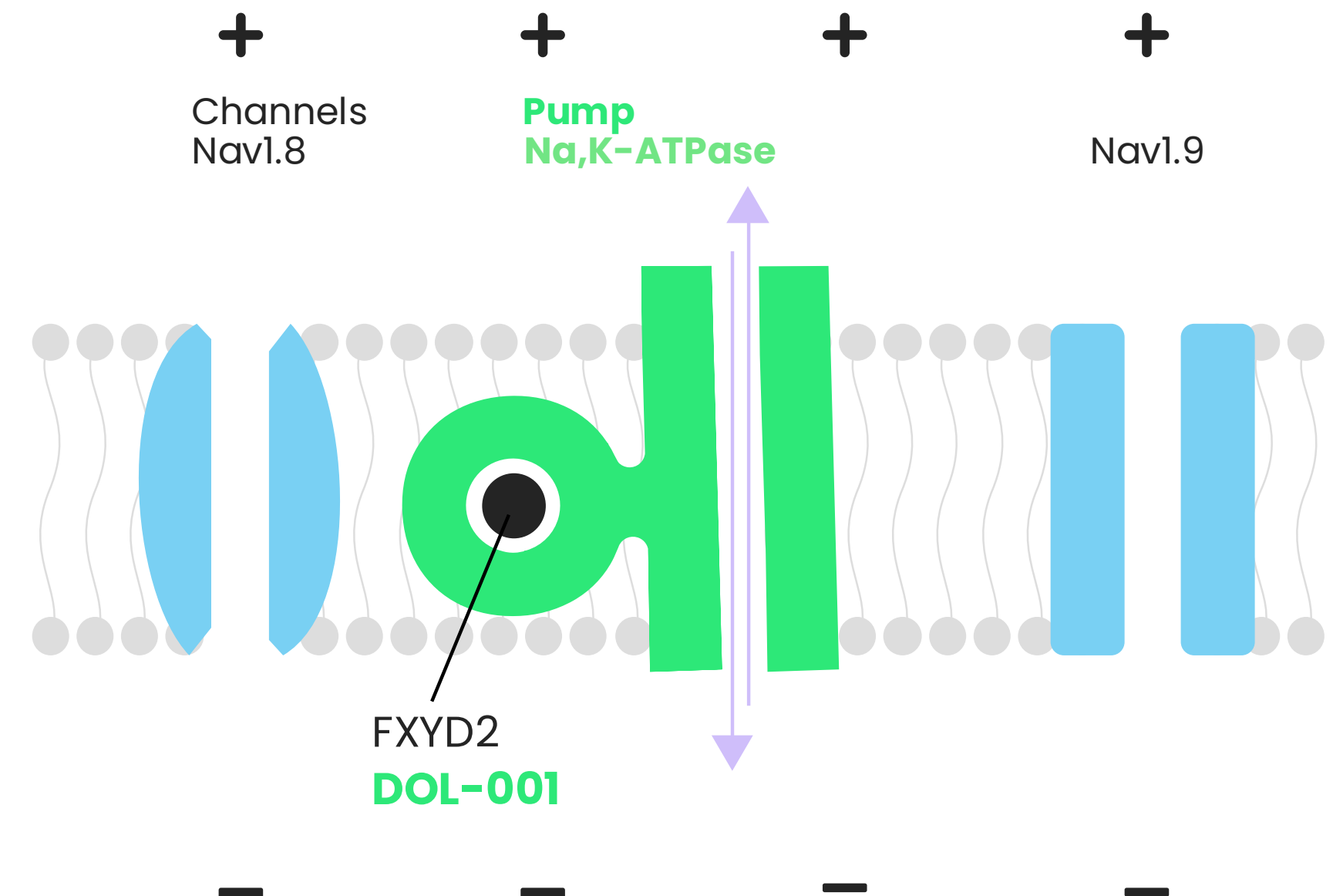
Introducing

Precision Pump Modulators (PPMs)

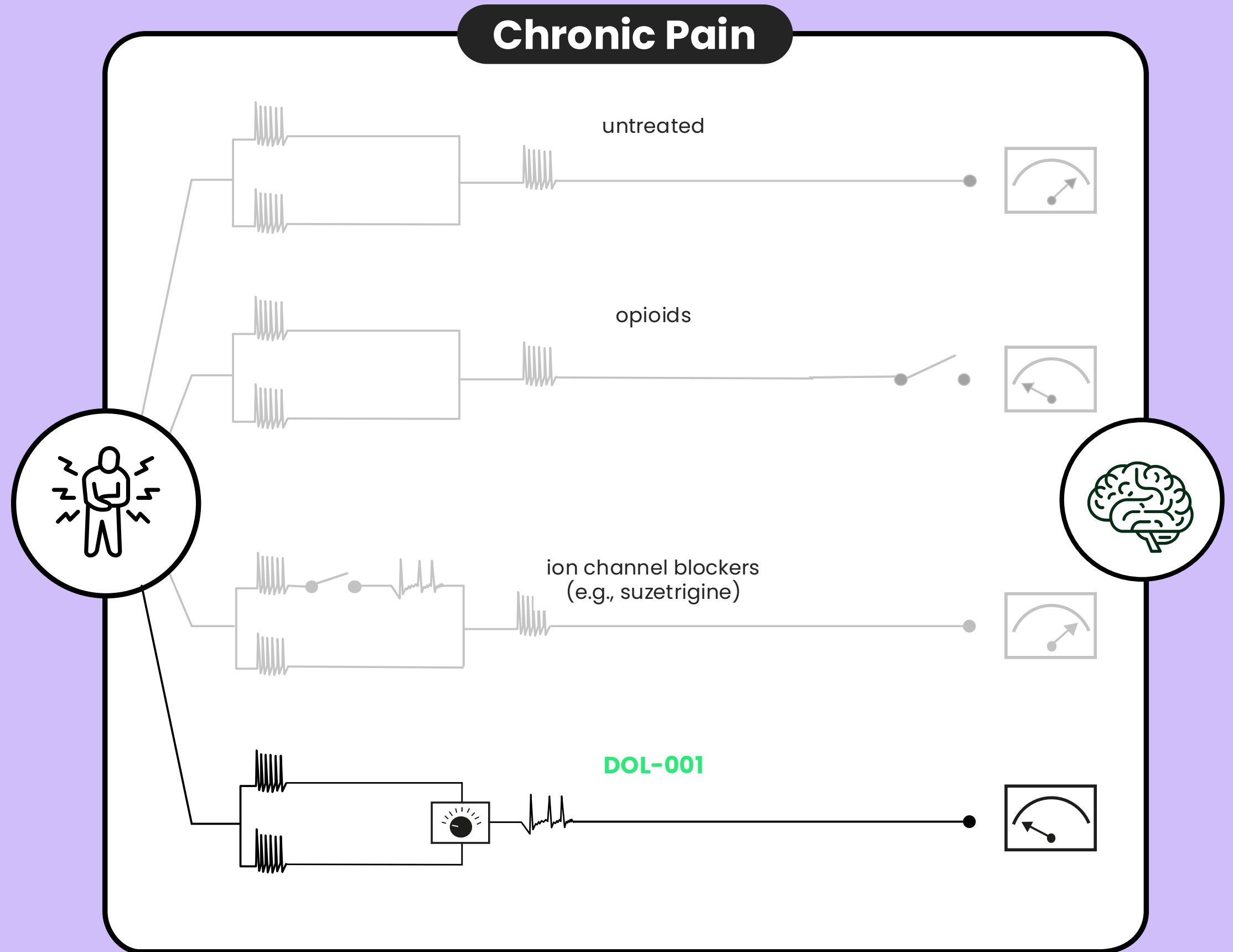
A novel class of precision drugs that targets the ion pump, rather than ion channels.

Our lead candidate DOL-001 downregulates FXYD2, a key component of the Na,K-ATPase ion pump.

FXYD2 regulates ion transport, structural stability, and binding affinity and is required for maintaining membrane depolarization and excitability.



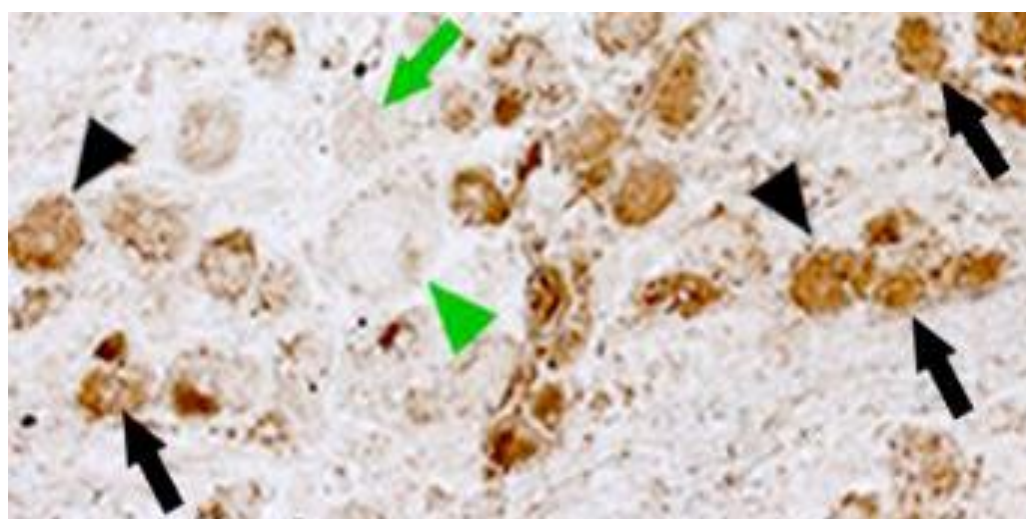
Mechanism of action, comparison



Lead candidate: DOL-001

Targeted modulation of chronic pain

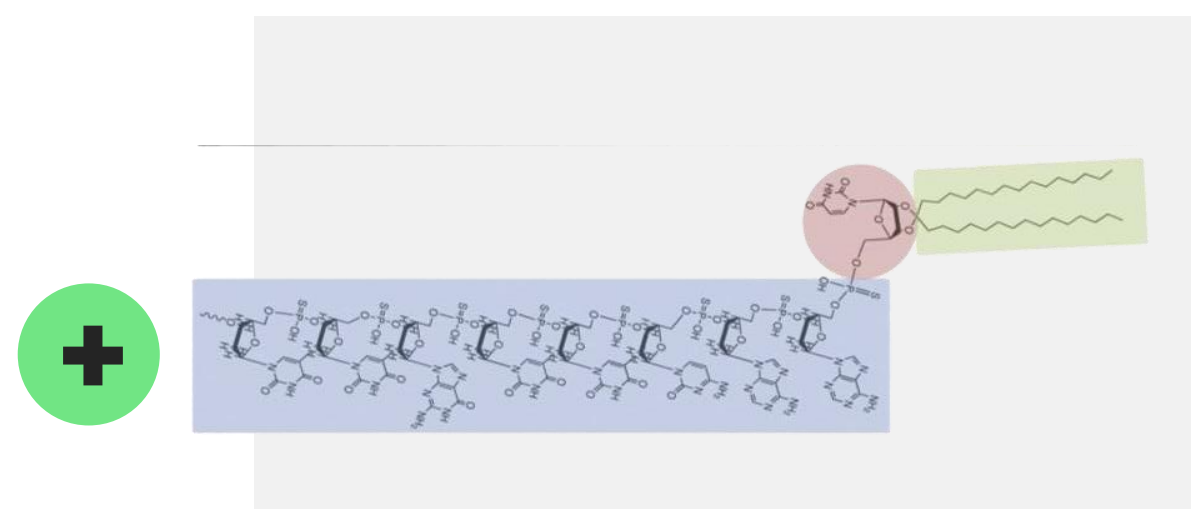
First to target an ion pump,
our proprietary target FXYD2



- **FXYD2** is a 7-transmembrane domain protein
- **Key regulator** of neuronal hyperexcitability via Na-K-ATPase pump
- **Peripheral nervous system**

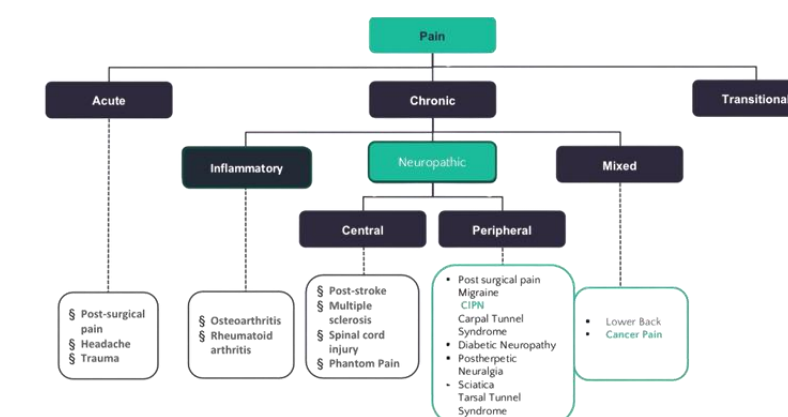


First to apply a lipid
antisense oligonucleotide
(L-ASO) to chronic pain



- **Conjugated proprietary chemistry**

First to address a broad
spectrum of chronic
pain indications



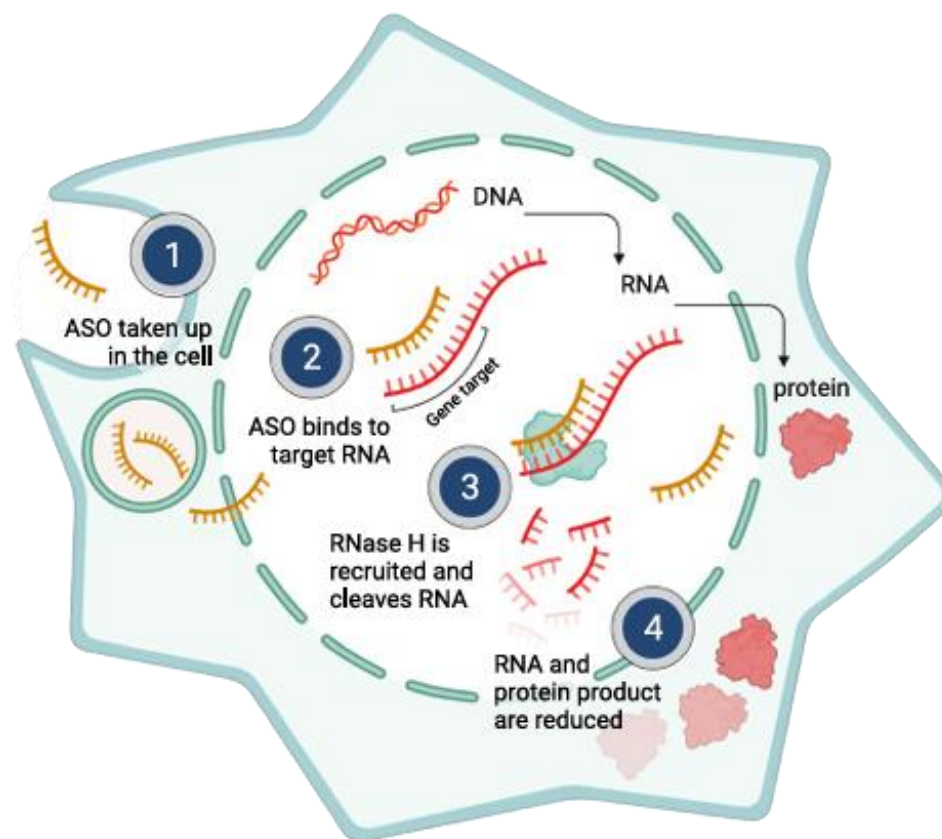
- **Neuropathic & inflammatory pain application**
- **1st clinical PoC strategy for severe and objective pain**

Modality: L-ASO Therapeutics

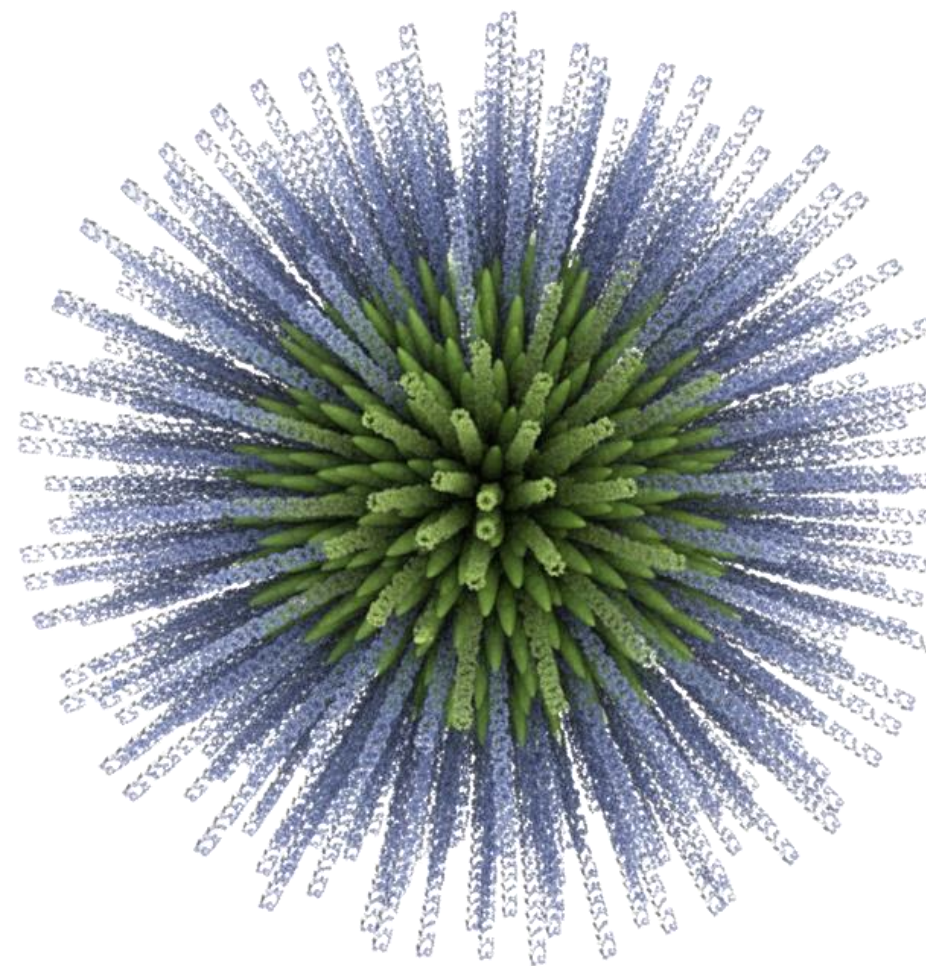
Lipid-conjugated antisense oligonucleotide

How ASOs act

- ASO precision gives high specificity and clean PK/PD
- Lipid conjugation drives efficient delivery to peripheral nociceptors in the DRG

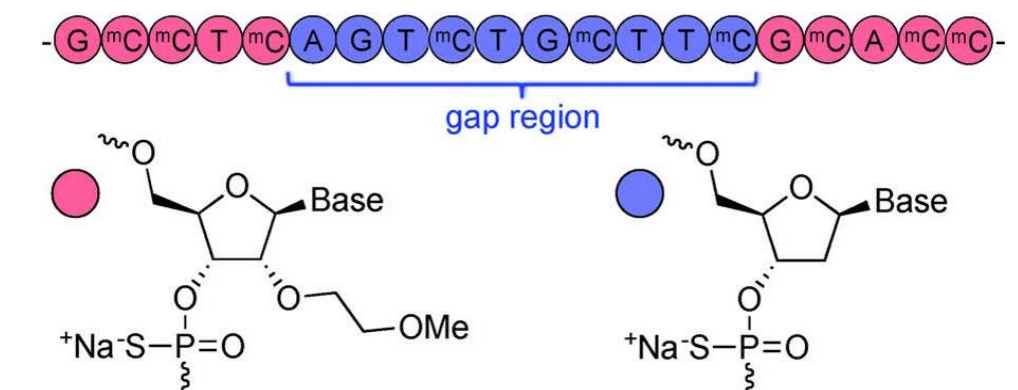


Using a precision therapeutic modality to increase specificity



ARNA

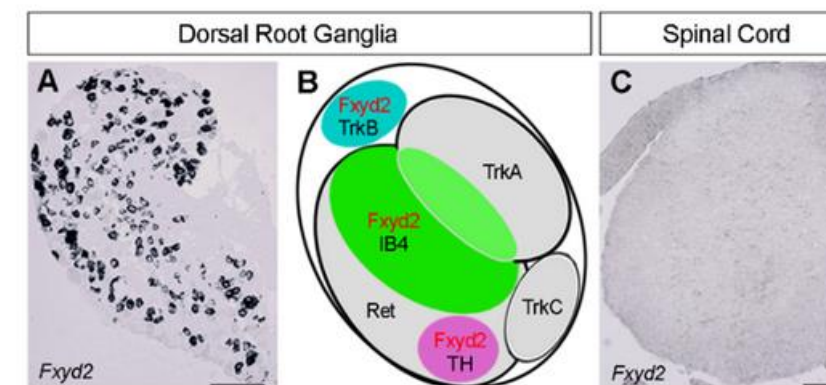
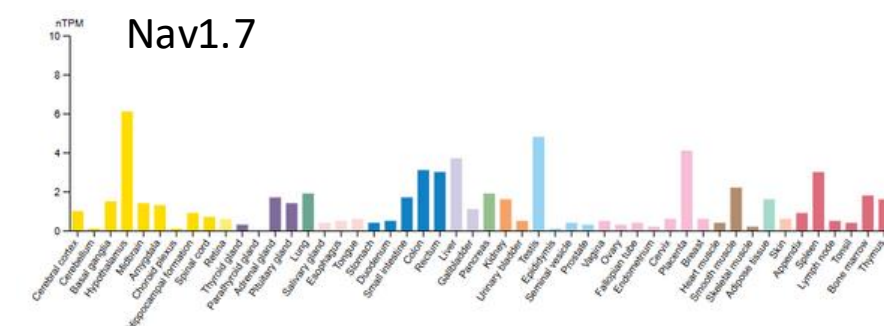
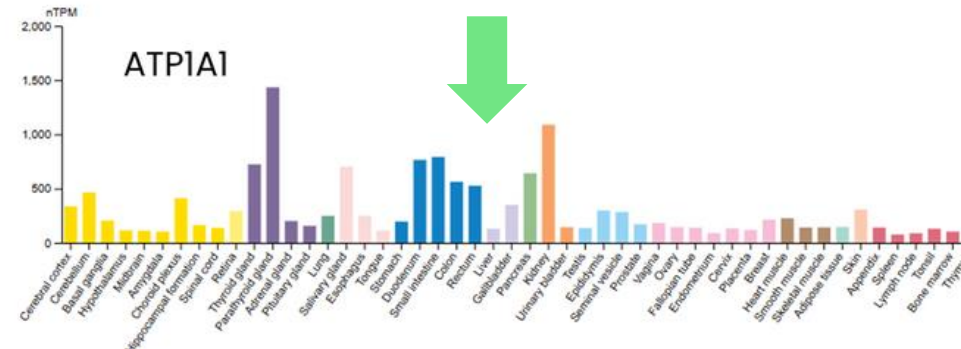
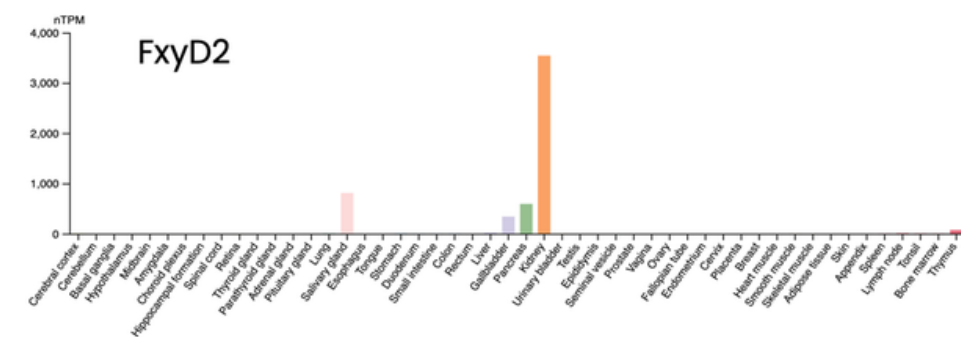
2'-MOE-modified
FXVD2-LASO-Gapmer



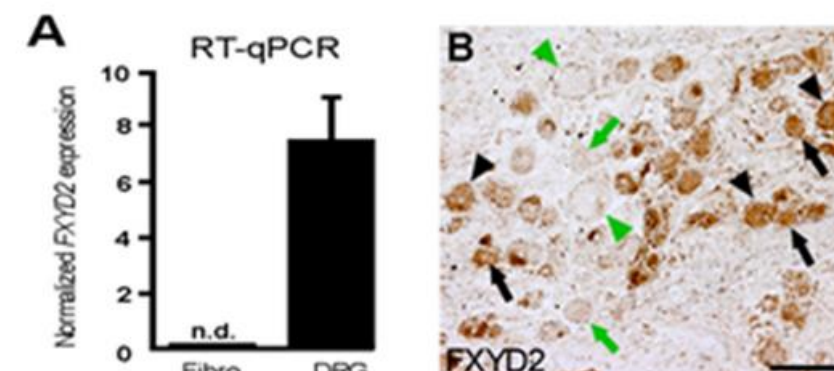
- Rethinking ASO chemistry for optimized DRG Biodistribution

Specificity: expression of the FXYD2 target is specific to non-peptidergic nociceptors in the DRG

FXD2 – a highly specific DRG target modulator of a widely expressed pump

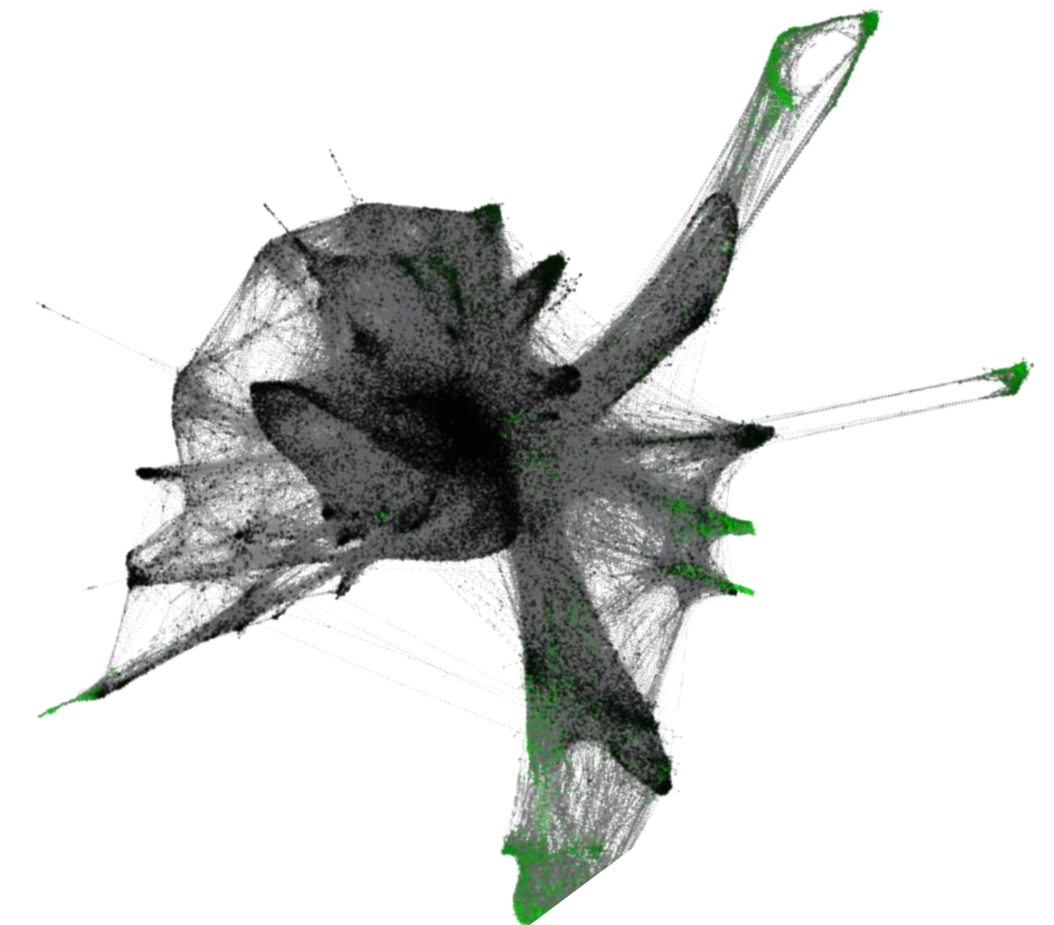


Fxyd2 has an expression profile restricted to the somatosensory system in the DRG (mice)



Fxyd2 expression confirmed in human DRG

➤ Nav Channels are widely expressed



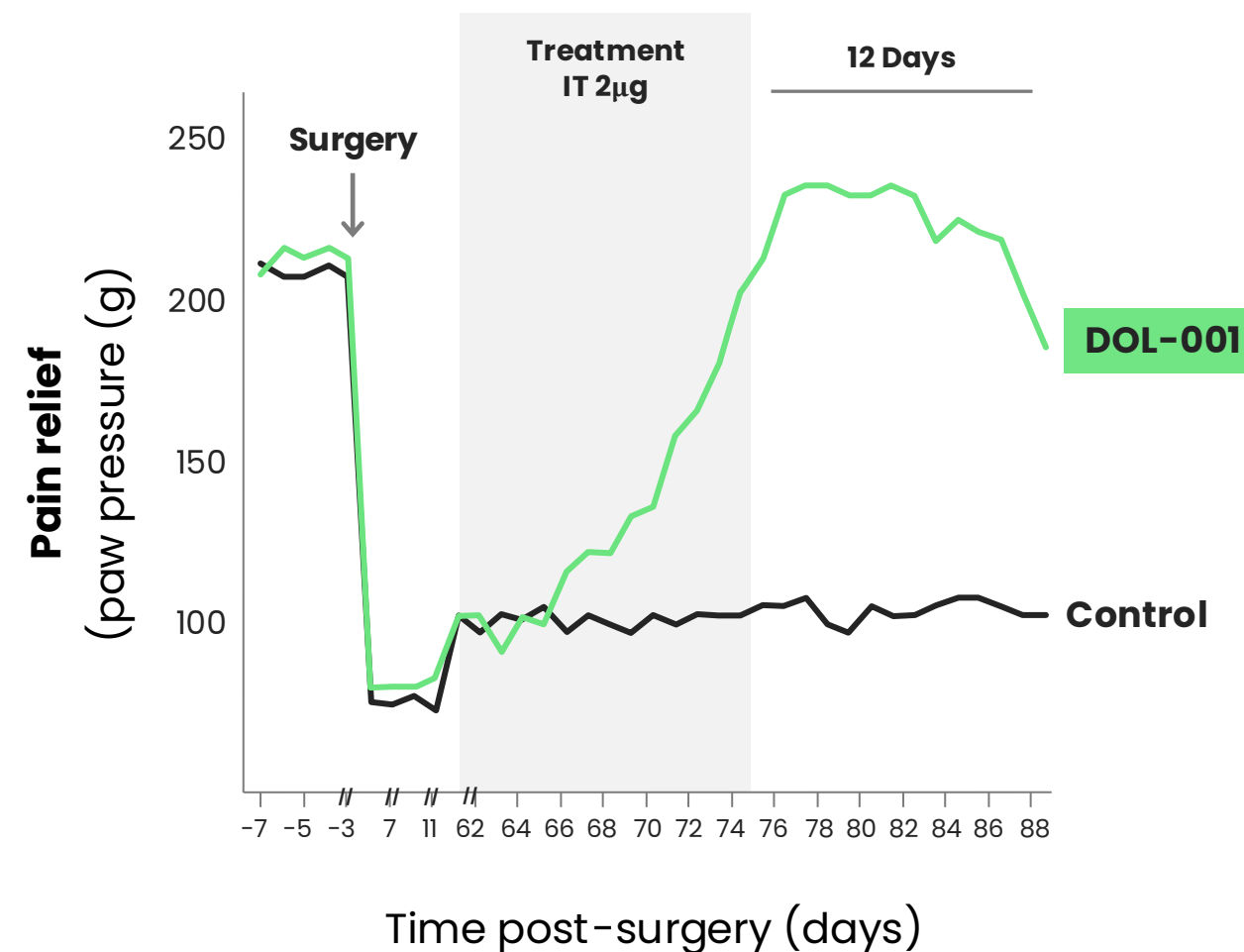
Visualization of DRG cell RNA-seq data showing **specific expression of FXD2** (green) in DRG **non peptidergic nociceptors**

SPRING Viewer (Harvard Medical School, Klein Lab)

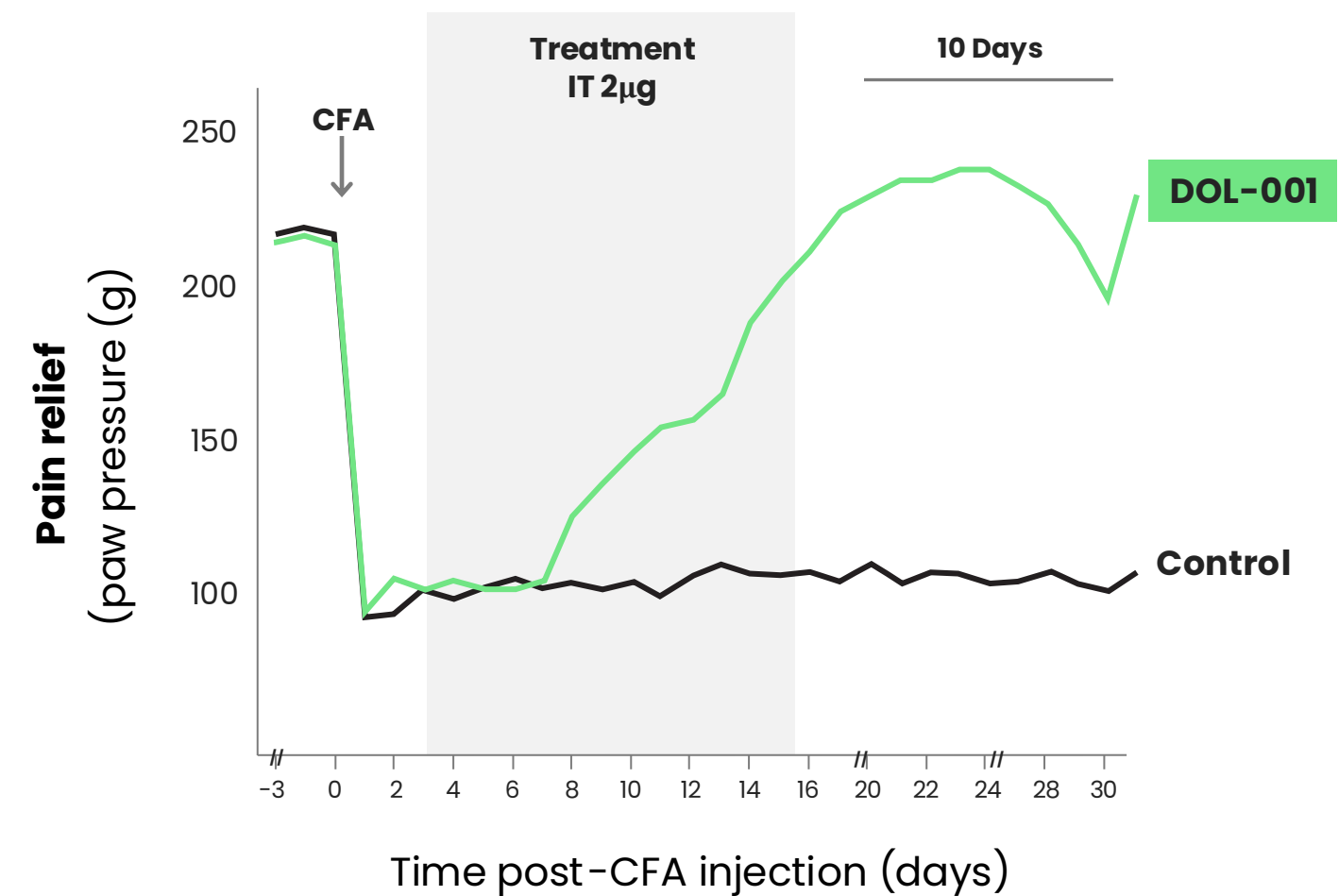
Proof of concept *in vivo*: long-lasting therapeutic efficacy

DOL-001 alleviates neuropathic and inflammatory pain in animal models

Neuropathic pain animal model

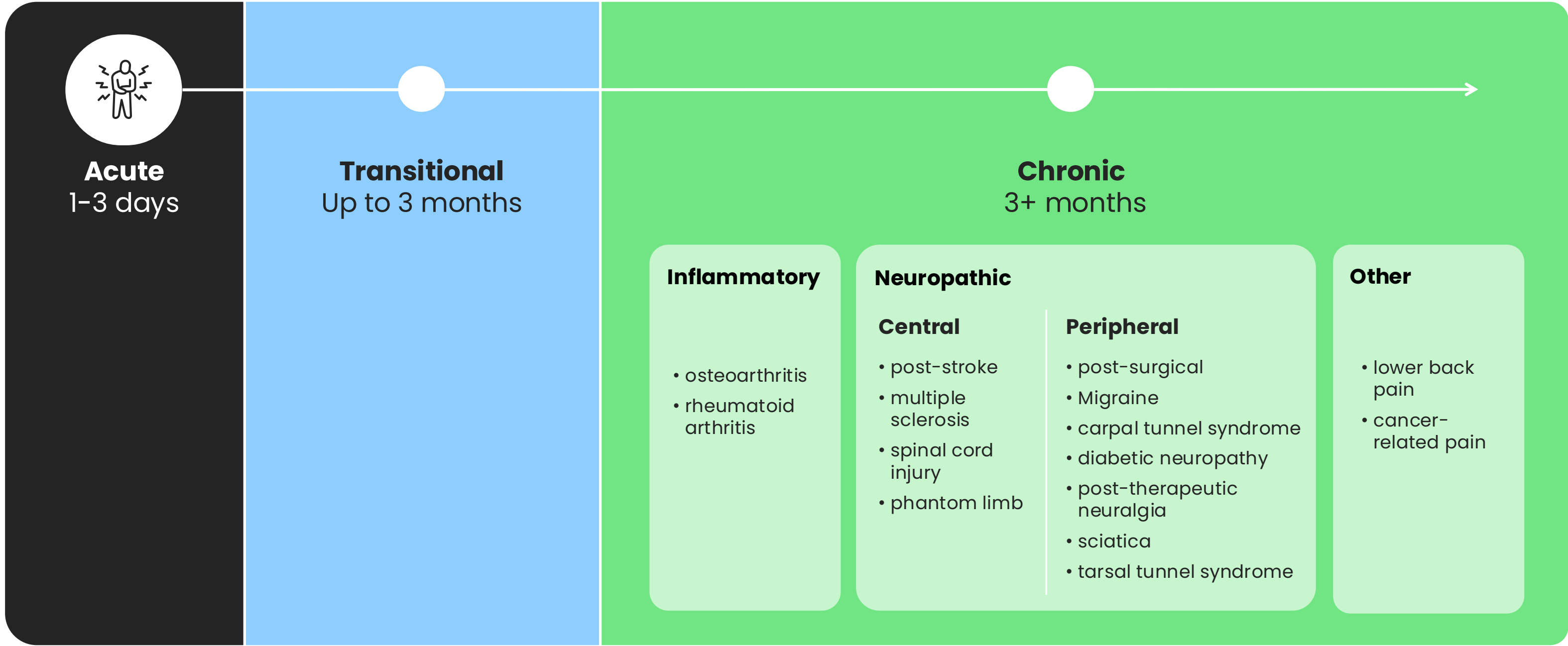


Inflammatory animal pain model



- Comparable results were observed after **IV administration**, with a similar long-lasting effect
- CIPN models showed both **preventive & therapeutic benefits**

Broad applicability in chronic pain management



Solid IP position across every component

4 PATENTS UNDER EXCLUSIVE LICENSE

N°1

TECHNO

family WO2014/195430

N°2

TARGET

family WO2016/005422

N°3

PRODUCT

family WO2021/069654

N°4

IV ROA

family WO2024/146935

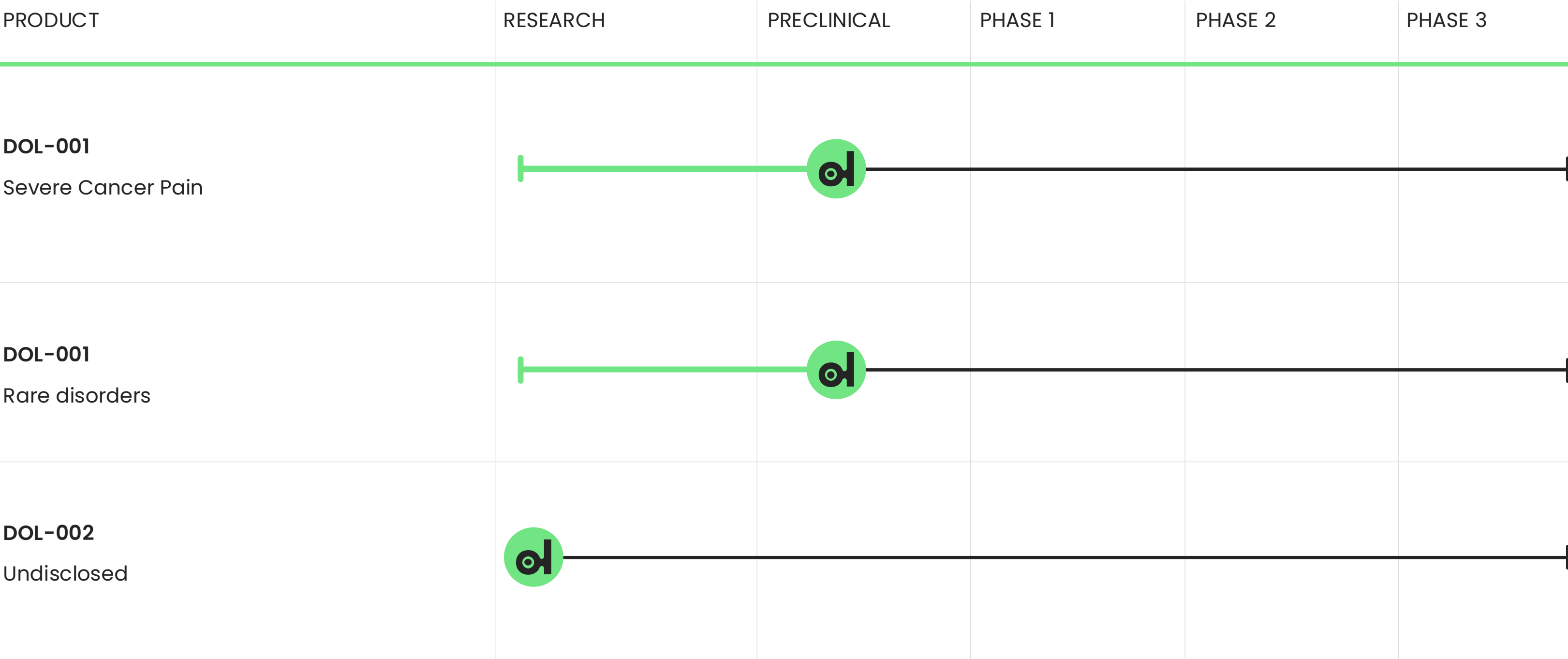
ONGOING FILING PATENT ON FORMULATION

N°5

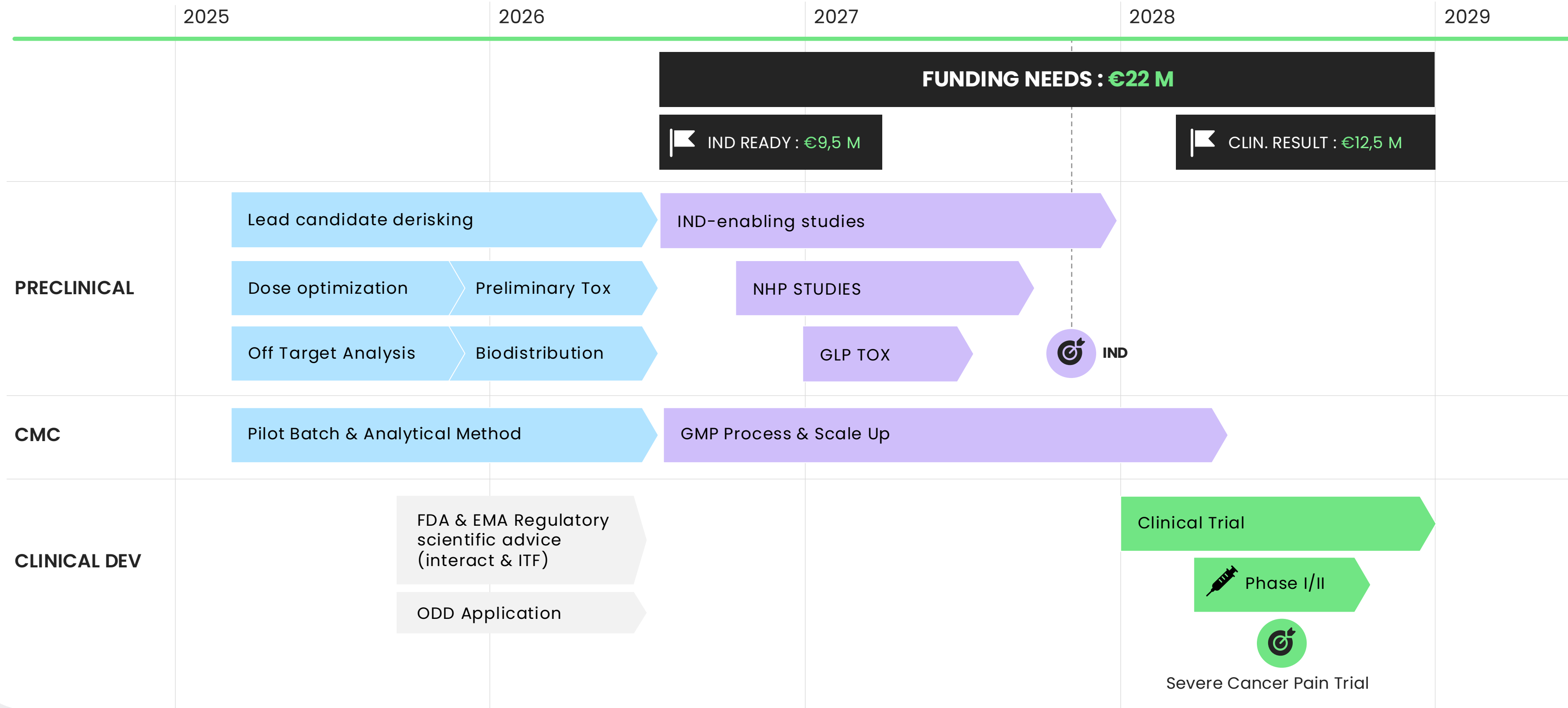
FORMULATION

protection ongoing

Building an exciting **chronic pain pipeline** in neuropathic and inflammatory pain



Accelerated path to the clinic, first-in-human in 2028



Strategic partnerships with leading institutions

US Initiants & Scientific Leaders



CROs



Incubators and accelerators



Academic Institutions France & Europe



Fundings and partners



Pain management is at an inflection point

January 30, 2025

FDA approves novel non-opioid treatment for moderate to severe acute pain. **First drug approved in new class of non-opioid pain medicines.**

March 17, 2025

Latigo Biotherapeutics Closes **\$150 Million in Series B** Financing to Advance Non-Opioid Pain Therapeutics.

December 18, 2025

iN Therapeutics secures **\$500 M pain drug license deal** with US biotech.

January 20, 2026

Levixcept announces **FDA acceptance of IND application for LEVI-04**, a potentially disease-modifying treatment for osteoarthritis.

March 06, 2025

Tris Pharma eyes approval after **pain drug triumphs in second Phase III trial.**

May 27, 2025

Eli Lilly lands next-gen pain asset in SiteOne Therapeutics **acquisition worth up to \$1B.**



Join the pain management revolution

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