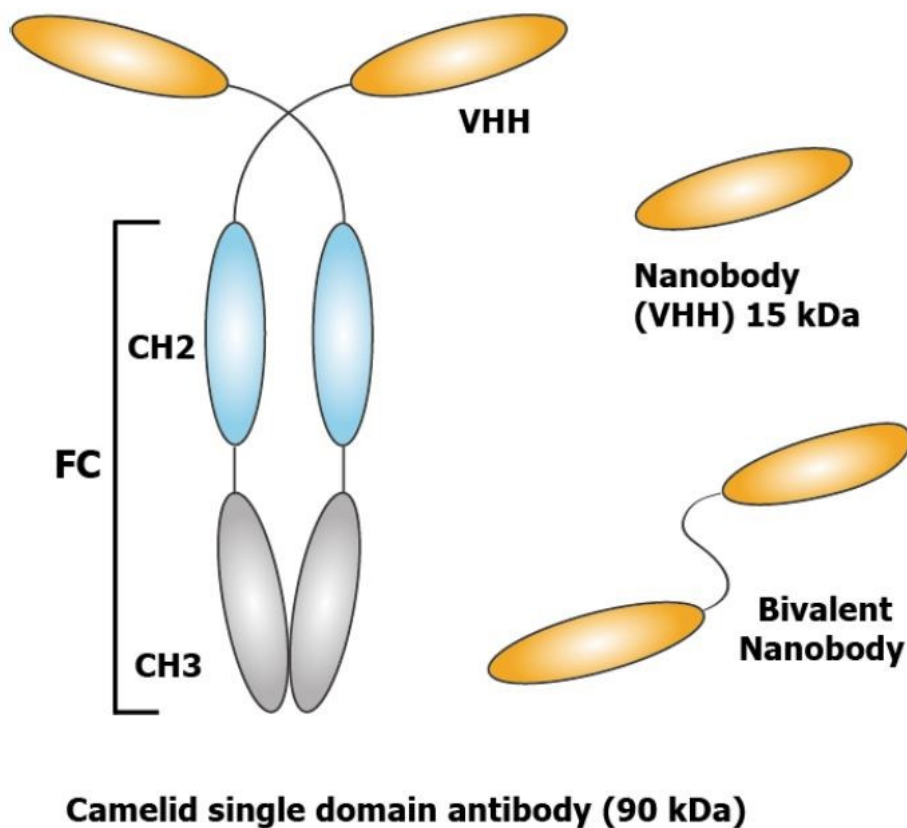


# CaSR nanobodies

Novel therapeutics for treating secondary hyperparathyroidism in patients with chronic kidney disease

## NANOBODIES



## Background

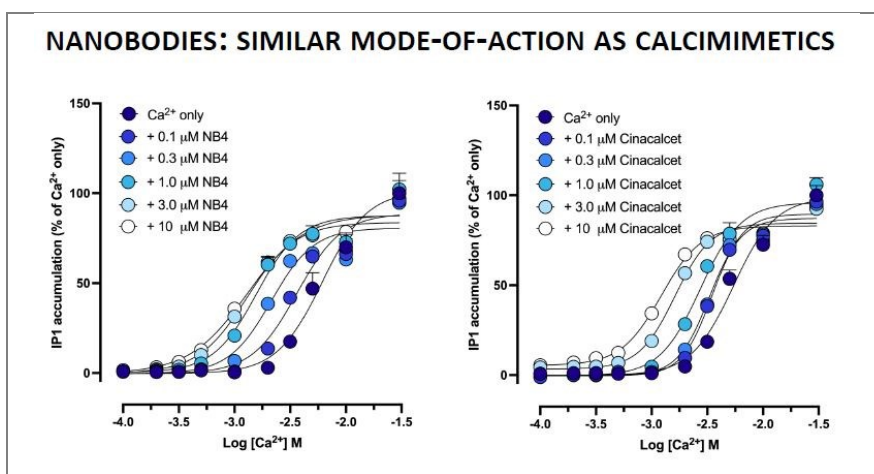
Chronic kidney disease (ckd) is a disorder that leads to the gradual loss of kidney function, impairing the ability to maintain ion homeostasis and regulate urinary secretion. Ckd is the 12th leading cause of death worldwide.

## The invention

We have developed a novel class of biologics (nanobodies) that target the calcium-sensing receptor (CaSR) as treatment paradigm for chronic kidney disease (CKD) with secondary hyperparathyroidism. Currently, secondary hyperparathyroidism (SHPT) is treated with a small molecule drug class 'calcimimetics' that target CaSR. However, the use of these drugs is limited due to severe side effects in patients.

**Our solution** to overcoming these side effects is **CaSR-targeting nanobodies**.

Nanobodies are small variable domain fragments of single-domain antibodies derived from llamas offering several advantages compared to conventional antibodies. Thus, **nanobodies are excellent tools to therapeutically modulate receptors**.



## Key features

- high target affinity
- high selectivity
- tissue- and disease-specific modulation
- reduced side-effects

## Development status

We have identified and characterized monovalent nanobodies in vitro to determine mode-of action at target, and delineated nanobody-binding epitopes. We have developed humanized nanobody-FC conjugates to improve circulatory half-life and target coverage, and bivalent nanobodies to improve pharmacology for the target. Moreover, we have explored the potential of combination therapy using nanobodies and calcimimetics.

Our **next step** is to test nanobodies and nanobody conjugates in pre-clinical in vivo models and further improve their pharmacokinetic and pharmacodynamic properties.

## Intellectual property rights

CaSR nanobodies are patented under patent application EP19211709.1