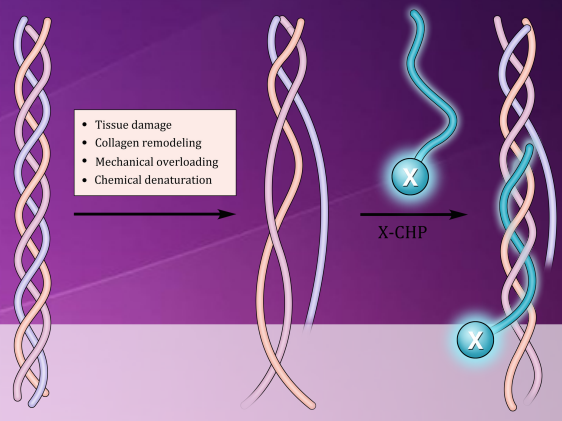
3Helix

Empowering collagen targeting for the diagnosis and treatment of human conditions



What are CHPs?

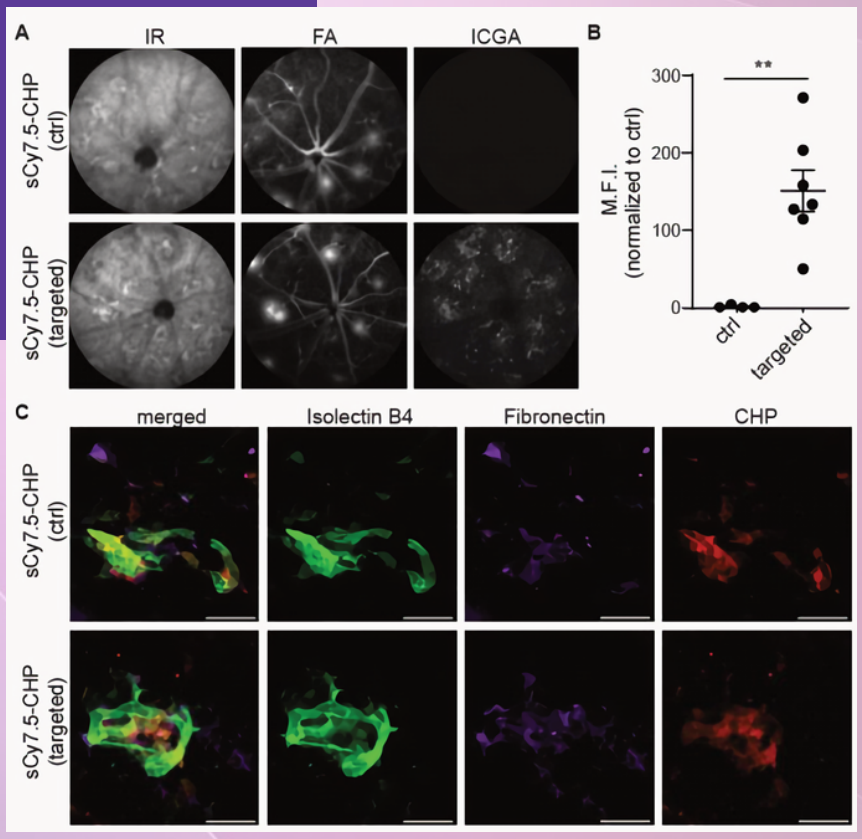
Collagen is the most abundant protein in mammals. It is the major structural component of almost all organs and tissues. Excessive collagen remodeling is associated with a variety of chronic pathological conditions, such as cancer, arthritis, and fibrosis.

3Helix's Collagen Hybridizing Peptide (CHP) is a synthetic peptide that can specifically bind to denatured collagen by structural recognition of exposed alpha-strands. Our *in vivo* CHP is conjugated to a near-infrared dye to enable **accurate and reliable measurements** of collagen turnover in live animal models. CHPs can be used in sub-cutaneous, *in situ*, or intra-veinous injections and a single animal can be dosed several times. Multiple images can be taken after a single injection and the fluorescent signal can be quantified using image analysis software, such as ImageJ.

In vivo imaging of nAMD

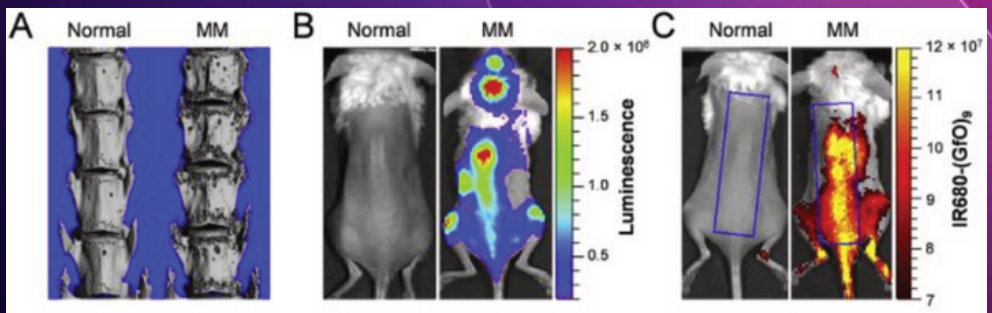
in collaboration with Roche Ophthalmology

Neovascularized age-related macular degeneration (nAMD) is a condition that affects 17 million people worldwide and is accompanied by subretinal fibrosis. CHPs are able to directly detect fibrotic regions in a laser-induced model for nAMD in an *in vivo* setting and the signal can be easily quantified.



In vivo imaging and *ex vivo* fluorescent immunofluorescence of sulfo-cyanine 7.5 collagen hybridizing peptide (sCy7.5-CHP) binding to remodeling collagen in JR5558 mice. JR5558 mice received targeted or control sCy7.5-CHPs intravenously and were analyzed 5 days later using *in vivo* imaging followed by *ex vivo* IHC. (A) Representative images of JR5558 retinas showing infrared reflectance (IR), fluorescein angiography (FA), and sCy7.5-CHP *in vivo* binding. (B) MFI of control and targeted sCy7.5-CHPs in JR5558 retinas (control, n = 4; targeted, n = 7). (C) Representative images of retinal pigment epithelium (RPE)/choroid flat mounts from JR5558 mice (previously injected with sCy7.5-CHPs) co-stained for sCy3 collagen hybridizing peptide (R-CHP) binding, isolectin B4, and fibronectin.

In vivo imaging of bone destruction in Multiple Myeloma



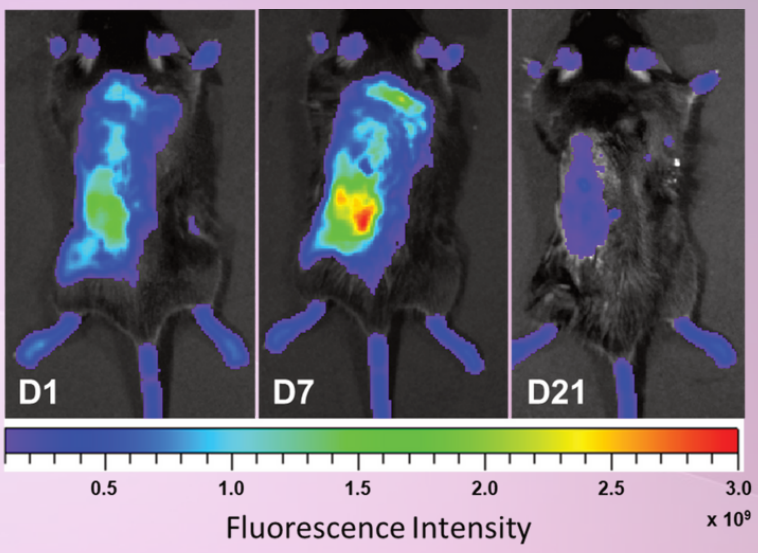
(A) Micro-CT scans of the spine from the multiple myeloma (MM) mouse showing abundant osteolytic lesions as "hollow spots", in comparison to a normal control.
(B) Luciferase bioluminescence showing myeloma cell growth only in the MM mouse.
(C) Near-IR CHP images of the MM mouse in (B) and a normal control mouse, demonstrating highly elevated signals in the MM mouse.

Why Use CHPs

CHPs specifically visualize degraded collagen *in vivo*. Unlike competitor products, such as MMPSense, that detect enzyme activities as an indirect measure, CHP **binds directly to degraded collagen at the molecular level** allowing for accurate visualization of disease states. Our *in vivo* CHPs can be directly injected without pre-activation.

- **Superb affinity and signal intensity that can be used for small animal imaging.**
- **CHP has a strong capability to hybridize with denatured collagen strands *in vivo* by reforming the triple helix.**
- **CHPs are able to detect actively remodeling collagen in fibrotic conditions over time.**
- **Our *in vivo* CHP maintains high affinity for denatured collagen without the need for any pre-workup.**
- **Applicable to all types of collagen in any species with essentially no nonspecific binding**

In vivo imaging of chronic kidney disease



CHPs can be used to study a wide variety of diseases states

Subretinal fibrosis nAMD, Kidney fibrosis, Idiopathic pulmonary fibrosis (IPF), Pancreatic cancer, NASH

In Vivo CHPs	SKU	Size
Target-sCy7.5-CHP	INVIVOTGT7.5	3 Doses (8nmole)
Control-sCy7.5-scCHP	INVIVOCTL7.5	3 Doses (8nmole)
sCY7.5 In Vivo Kit	INVIVOKIT7.5	10 Doses Targeted (24nmole), 3 doses control (8nmole)

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