

# RE-CROSS<sup>®</sup>

Cross-Linked Sodium Hyaluronate for Intra-Articular Injections

by  
Reviscon

*Motion is life*



 **VSY**  
**BIOTECHNOLOGY**  
*we inspire...*

 **PLAY**  
**SURE**  
*doping free*

POWERED BY  
**HXL**  
HYBRID **XLINK**  
TECHNOLOGY™

# VSY Biotechnology

*We inspire!*

With **VSY Biotechnology**, you can rely on over 15 years of experience in science driven development, manufacturing, and marketing of innovative medical products. Our orthopedic portfolio covers a wide and unique range of biotechnologically produced intra-articular hyaluronic acid injection products for the treatment of osteoarthritis; all of them produced under the highest industry standards, certified across the globe and clinically proven to be safe, effective and well tolerated by patients around the globe!

## Re-Cross by Reviscon® - A new benchmark in OA treatment!

With **Re-Cross by Reviscon®**, powered by our unique and proprietary **HXL HYBRID XLink Technology™**, the latest edition to VSY Biotechnology's IA-HA portfolio, we set a new benchmark in osteoarthritis treatment by introducing the world's first and only linear structured and simultaneously moderately cross-linked sodium hyaluronate, leading to an enhanced therapeutic effect and long-lasting pain relief for patients worldwide.



## The Re-Cross® promise - Focus on the patient!

Our continuous investment in the research and development of disruptive therapies for the treatment of musculoskeletal diseases reflects VSY Biotechnology's approach of using meticulous scientific precision to tackle the spread of one of the most challenging health problems of our time - osteoarthritis of the joints!

**Re-Cross by Reviscon® - clinically proven, effective, safe, and well tolerated by patients around the globe!**

A clinically proven, symptom-oriented therapy is intra-articular injection with our hyaluronic acid preparation **Re-Cross by Reviscon®**.

This treatment method has become an integral part of global physician's every day's clinical practice, with a clear focus on the patient.

A team of experts is at your disposal for further information.

Please contact us at [orthopedics@vsybiotechnology.com](mailto:orthopedics@vsybiotechnology.com) or visit our website [www.reviscon.net](http://www.reviscon.net)

***Your VSY Biotechnology Orthopedics Team***

# OA therapy options with Re-Cross<sup>®</sup>

An intra-articular injection therapy with the moderately cross-linked, yet linear viscoelastic sodium hyaluronate **Re-Cross<sup>®</sup> by Reviscon<sup>®</sup>** is beneficial for patients:

1

suffering from joint pain due to osteoarthritis of the synovial joints (Kellgren – Lawrence Grade II-III).

2

directly post-operative, who underwent arthroscopic knee surgery and joint lavage [2].

3

with an active lifestyle, active and leisure athletes with first signs of movement limitations and joint pain.



4

who are seeking a clinically effective alternative to anti-inflammatory drugs and NSAID's.

5

who have shown to be allergic against biological impurities, animal proteins and/or preservative agents.

6

who suffer from osteoarthritic conditions due to obesity.

# Re-Cross® features & benefits

Setting new standards in hyaluronic acid formulations!

## HXL HYBRID XLink Technology™



With a molecular weight of 1 Million Dalton (MDa) **Re-Cross®**, coupled with the meticulously designed **HXL HYBRID XLink Technology™**, **Re-Cross®** IA-HA is tailored for rest and physical activity, and aligns with the dynamic nature of joint movement. The moderately cross-linked NaHa degrades slower than the linear NaHa, thereby providing unique cohesive energy characteristics, increased bioavailability, and thus prolonged pain relief.

Additionally, the combination of linear and moderately cross-linked NaHa helps minimizing further cartilage damage and fosters a healthy joint environment by its anti-inflammatory effect.

## Linear and moderately cross-linked molecule structures



**Re-Cross®** 2.2% (88 mg) sodium hyaluronate (NaHa) is powered by VSY Biotechnology's proprietary **HXL HYBRID XLink Technology™**.

By administering a combination of the dispersive, linear, and cohesive, moderately cross-linked NaHa molecule chains into the synovial joints, both, mechanical strength, and shock absorbing properties as well as lubricating and joint cushioning efficacy are enhanced, especially in case of articular cartilage damage.

## Highly purified NaHa solution

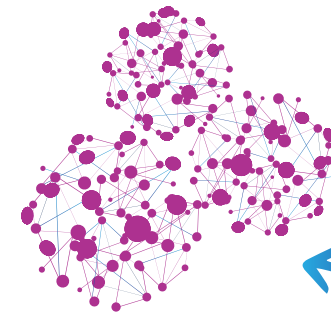


**Re-Cross®** 2.2% (88 mg) is a non-pyrogenic, non-immunogenic, highly purified, moderately cross-linked, simultaneously linear sodium hyaluronate (NaHa) solution for intra-articular injections into the synovial joints that is meticulously crafted for precision and purity, catering to individuals seeking a targeted and refined approach to joint health.

**Re-Cross®** IA-HA is biotechnologically manufactured (microbiological fermentation) according to ISO 13485 and does not contain any preservatives or ingredients from biological sources.

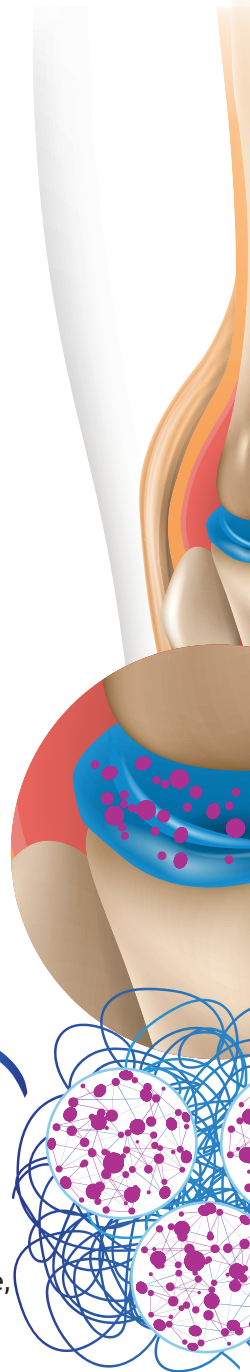
## Cohesion

Moderately cross-linked NaHa molecules.



## HXL HYBRID XLink Technology™

A combination of cohesive, moderately cross-linked and dispersive, linear NaHa molecules.





## Enhanced lubricating- and shock absorbing properties



**Re-Cross®** 2.2% (88 mg) sodium hyaluronate is a hyaluronic acid with 1 MDa, effectively enhancing shock absorption in the synovial joints. The mixed patterns of linear and moderately cross-linked molecule chains in **Re-Cross®** provides both, a high lubricating layer on the surrounding cartilage and tissue as well as an increased shock absorption effect, supporting the weight bearing capacities of the affected synovial joints. Simultaneously, **Re-Cross®** diminishes friction, enhances joint mobility, and provides long term pain relief between 6 to 12 months. <sup>[1]</sup>

## Mimicking healthy human synovial fluid properties



**Re-Cross®** 2.2% (88 mg) is designed to imitate healthy, natural synovial fluid properties to the highest extent possible. The biological mimicry of **Re-Cross®** IA-HA ensures optimal bioavailability and integration into the joint environment, with minimal degradation, aligning closely with the natural properties of human synovial fluid. The technology behind with **Re-Cross®** IA-HA is laid out for patients with early onset OA, and especially for individuals with an active lifestyle, professional and leisure athletes with first signs of movement limitations and joint pain.

## Patient centric administration protocol



The **Re-Cross®** administration protocol of only one syringe every six to twelve months, offers a sustainable and convenient therapy solution for individuals seeking long-lasting joint support and underscores the product's efficacy in promoting joint health over an extended period. This approach reflects VSY Biotechnology's commitment to patient centric, well-structured, and effective treatment plans and optimizes the impact of IA-HA OA therapy, allowing for gradual and sustained improvement in joint health.

## Patient safety and therapy efficacy



Intra-articular viscosupplementation into the synovial joints with **Re-Cross®** sodium hyaluronate is a safe and efficient procedure for patients suffering from OA and who have not responded sufficiently to previous pharmacologic treatments. To date, zero product related side-effects have been reported. <sup>[1]</sup>

# Re-Cross® at a glance!



Re-Cross® by Reviscon®

<b>API</b> Active Pharmaceutical Ingredient	Moderately Cross-Linked + Linear Sodium Hyaluronate (NaHa)
<b>Viscosity</b>	300.000 MPa
<b>Molecular weight</b>	1 MDa
<b>Concentration</b>	88 mg / 2.2 %
<b>PH value</b>	pH 6.8 – 7.6
<b>Osmolality</b>	300 to 350 mOsm/kg (similar to the human body synovial fluid)
<b>Volume</b>	4.0 ml
<b>Origin</b>	Biological Fermentation
<b>Injection intervals</b>	Single Shot (every 6 - 12 months)
<b>Shelf-life</b>	3 years
<b>Reference number</b>	700 001 15

1. Data on file (VSY Biotechnology GmbH, Leinfelden-Echterdingen, Germany)

2. Schneider S, Zahn T, Springorum HW, Schofer M. Influence of post-arthroscopic intra-articular administered hyaluronic acid on parameters of function and pain in the knee. OUP 2014; 7: 333–339 DOI 10.3238/oup.2014.0333–0339

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