

The IRAP II consists of a dual port, tubular device containing glass beads that maximize the surface area inside the device. Blood that has been incubated in this unique device can be separated to produce autologous serum useful at the point of care. Because the serum is derived from the animals own blood, the possibility of adverse allergic or anaphylactic side effects is drastically reduced.



## Features/Benefits

The serum produced by the IRAP II is autologous, which reduces potential side effects or complications associated with other treatment methods.

Blood processing using the IRAP II device produces serum containing anti-inflammatory and anti-degenerative compounds.

The newly designed IRAP II device increases the concentration levels of the beneficial factors in the autologous serum.



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*This Product is for Veterinary Use Only*

*Caution: Federal law restricts this device to sale by or on the order of a veterinarian.*

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# Arthrex IRAP™ II SYSTEM

## Autologous Blood Processing System



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# The Science Behind the IRAP II Process

## Technique

## References

Defects in articular cartilage can induce osteoarthritis by causing molecular changes in the synovial fluid. Research in molecular biology discovered the major inducer of osteoarthritis was the general inflammatory cytokine interleukin-1 (IL-1) which plays a key role in accelerating tissue destruction and the repair mechanisms.

In a healthy joint, IL-1 and interleukin-1 receptor antagonist (IL-1Ra) are in balanced concentrations. In cases of osteoarthritis, there is not sufficient IL-1Ra produced to block the destructive effects of the increased IL-1. The result is inflammation, joint pain, and eventually cartilage destruction.

In the Arthrex IRAP II, monocytes (a type of white blood cell) bind to the glass beads. The cells are then stimulated to produce regenerative and anti-inflammatory proteins without the addition of drugs. This process takes place over an incubation period of 24 hours.

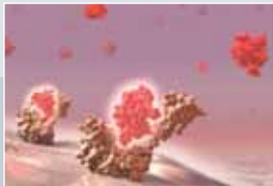
During the IRAP II process, 50 mL of blood is harvested into a syringe and transferred into the Arthrex IRAP II device.

The harvested blood is incubated for 24 hours to increase anti-inflammatory and regenerative protein concentration levels.

After incubation, the IRAP II device is placed into a centrifuge to separate the serum from the blood.

The serum is extracted and may be placed into syringes or ampoules for immediate use, or frozen for later use.

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3. D. Frisbie, C. Kawcak, N. Werpy, R. Park, W. McIlwraith: *Clinical, biochemical, and histologic effects of intra-articular administration of autologous conditioned serum in horses with experimentally induced osteoarthritis*. Amer Journal Vet Research, Vol. 68, No. 3, 2007.
4. DD. Frisbie, SC. Ghivizzani, PD. Robbins, et al: *Treatment of experimental equine osteoarthritis by in vivo delivery of the equine interleukin-1 receptor antagonist gene*. Gene Therapy 2002; 9:12-20.



In osteoarthritis, IL-1 is produced in large amounts and binds to receptor sites on the cartilage signaling cell destruction.



In the Arthrex IRAP II System, monocytes bind to the beads stimulating the regenerative and anti-inflammatory proteins during incubation.



Introduction of IRAP II serum into the joint.



The IRAP II serum has high concentrations of regenerative and inhibitory proteins that block the effects of destructive proteins like IL-1, by filling the receptors on the cartilage with IL-1Ra.

# IRAP II