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Application Note | May 2026 | Vol. 2



Analysis of the pathogenesis of Rheumatoid Arthritis by Transcriptomic Methods

Rheumatoid Arthritis (RA) is a complex autoimmune inflammatory disease that affects between 0.5-1% of the world's population, appearing more frequently in women between 40 – 60 years old.
Among the symptoms it causes is chronic synovial inflammation, which translates as chronic inflammation of the different joints of the body, with the consequent reduction in the quality of life that this entails for the affected patients.
In recent years, many efforts have been put into the study of RA. However, the exact mechanism that produces it is yet to be known.
The laboratory study of RA can be approached from different angles: from a genomic point of view (at DNA level), transcriptomic (at the RNA level) and proteomic (at the protein level). However, genomic information is, by definition, static, and does not necessarily represent all the genes that are transcribed and translated into proteins in an individual and in a given environment.

For this reason, the transcript
omic and proteomic analysis has proven to be more accurate.

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Transcriptomic Analysis

To analyze and compare samples from healthy patients and patients with RA from a transcriptomic point of view, the first step consists of isolating the RNA from the samples. One of the methods to extract RNA is the one used by Trizol.
Briefly, for this method one has to start with the desired sample volume in a 15 mL tube, and alternate the addition of different reagents (Trizol, Chloroform, Isopropanol, etc.) with the centrifugation of the samples. Generally the samples are centrifuged at 10,509xG, 15 min and 4ºC; however, for washing, centrifugation at 7,500xG, 5 min and 4ºC would be sufficient.

For these centrifugation steps the centrifuge ROTA 4R has a wide range of fixed angle rotors and swingout rotors, both for variable speeds with capacities up to 16 tubes of 15 ml or 8 tubes of 50 ml in these swingout rotor for additional microtubes, cryotubes as well as MTP or Bottles can be spun in this centrifuge. and high speed tubes is the best option, Its powerful refrigeration system allows it to keep the minimum chamber temperature below 4°C regardless of the type of rotor and the selected speed.
As a result of the centrifugations, two phases are formed in the tube, which are known as “supernatant” (upper phase) and “pellet” (sediment). Thus, after the last centrifugation, the supernatant is discarded and the pellet, which contains the extracted RNA, is stored for subsequent analysis by transcriptomic methods (microarray or RNAseq).

Finally, once the samples have been analysed, the results are compared with each other, to determine the differences in the expression of certain genes of interest between samples from healthy patients and those obtained from patients diagnosed with RA.
The transcriptomic approach for the study of RA allows comparisons to be made between healthy patients and patients with RA in terms of the expression of certain genes of interest.

For this process, it is necessary to isolate the RNA from the test samples; process that requires different steps of chain centrifugation during which temperature stability must be ensured to avoid deterioration of the genetic material.

Product Details:

ROTA 4R with 6x50ml Rotor and 15ml adapters.

Product – Rota 4R V/FM

ROTA 4R V/FM (Refrigerated Centrifuge)
PART NO : 100114

ROTOR : 6 X 50mL
L006 x 05 ml Fixed angle rotor with 15ml adapters
PART NO : 200151

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Since the 1980's Scientiquipp (formerly known as Plasto Crafts) has been synonymous with customer-oriented processes and innovative products, such as laboratory devices. Today, we serve as experts and advisors, using our unique knowledge and experience to support laboratories and research institutions around India. The foundation of the company's expertise is its focus on its customers. Scientiquipp's exchange of ideas with its customers results in comprehensive solutions that in turn become industry standards. Scientiquipp will continue this path in the future, to the standard set by the company's founders: that of *enabling the future of medicine.*

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