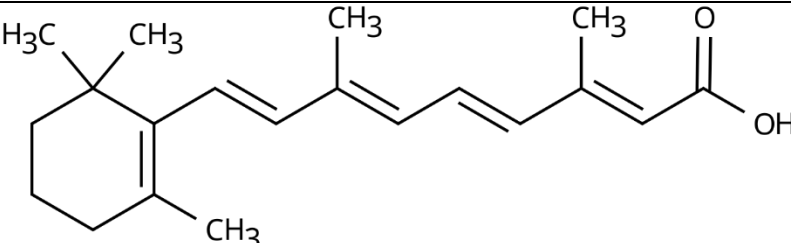


## TrailBio® Retinoic Acid User Instructions

### Product Configurations

| Catalog Number | Size   | Quantity |
|----------------|--------|----------|
| TB94198        | 500 mg | 1 vial   |

### Product Description

| Category           | Specification                                                                        |
|--------------------|--------------------------------------------------------------------------------------|
| Product            | Retinoic Acid                                                                        |
| Synonyms           | tretinoin, all-trans-Retinoic acid, Vitamin A acid, ATRA                             |
| CAS Number         | 302-79-4                                                                             |
| MDL Number         | MFCD00001551                                                                         |
| Formula            | C <sub>20</sub> H <sub>28</sub> O <sub>2</sub>                                       |
| Molecular Weight   | 300.44 g/mol                                                                         |
| Storage (Solid)    | -20 °C for up to 3 years, protect from moisture and light                            |
| Storage (Solution) | -80 °C for up to 6 months or -20 °C for up to 1 month; protect from light            |
| Shipping           | Ambient temperature                                                                  |
| Chemical Structure |  |

### Quality & Analytical Specifications

| Test Parameter           | Specification          |
|--------------------------|------------------------|
| Solid Appearance (Color) | Light yellow to yellow |
| Purity                   | ≥98%                   |

## Solubility

| Solvent | Solubility            | Notes                                          |
|---------|-----------------------|------------------------------------------------|
| DMSO    | ≤50 mg/ml (166.42 mM) | may require sonication and warming up to 60 °C |

## Solution Preparation Guide

| Amount | 1 mM      | 5 mM     | 10 mM    |
|--------|-----------|----------|----------|
| 1 mg   | 3.329 ml  | 0.666 ml | 0.333 ml |
| 5 mg   | 16.642 ml | 3.329 ml | 1.664 ml |
| 10 mg  | 33.285 ml | 6.657 ml | 3.329 ml |

## Biological Description

Retinoic acid is an endogenous retinoid that binds and activates retinoic acid receptors RAR $\alpha$ , RAR $\beta$ , and RAR $\gamma$ . Ligand-bound RAR/RXR complexes regulate transcription through retinoic acid response elements in DNA, producing changes in gene expression that influence cell proliferation, differentiation, and development. Retinoic acid can also bind PPAR $\beta$  / $\delta$ , supporting neuronal maturation. Retinoic acid can be used to investigate retinoid-responsive transcription, nuclear receptor signaling, and differentiation-dependent cellular processes.

## Associated Pathways & Applications

| Category            | Description                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Associated Pathways | Retinoic acid/RAR; RAR/RXR; PPAR $\beta$ / $\delta$ ; vitamin D-related/nuclear receptor; metabolic enzyme/protease; Wnt/ $\beta$ -catenin; Nrf2 |
| Applications        | Stem cell culture and differentiation; neural differentiation; organoid culture; retinoid signaling; nuclear receptor; autophagy                 |

## Activity & Targets

| Target        | IC <sub>50</sub> |
|---------------|------------------|
| PPAR $\alpha$ | 14 nM            |
| PPAR $\gamma$ | 14 nM            |
| RAR $\alpha$  | 14 nM            |
| RAR $\beta$   | 14 nM            |
| RAR $\gamma$  | 14 nM            |

## Notes

- When using DMSO-based stock solutions, maintain a final DMSO concentration of <0.5% in cell culture applications to minimize potential cellular toxicity, unless a higher concentration has been validated for the specific cell type.
  - Avoid repeated freeze-thaw cycles. Prepare single-use aliquots when possible.
  - Compound may collect on the vial cap or neck during shipping; centrifuge briefly before opening to bring contents to the bottom.
  - Certificate of Analysis (CoA) available upon request. Please contact [support@trailbio.com](mailto:support@trailbio.com).
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## Also available from Trailhead Biosystems®

### Cells

- TrailBio® Vascular Leptomeningeal Cells (Cat No. EC040003010)
- TrailBio® Hematopoietic Progenitor Cells (Cat No. ME060001020)
- TrailBio® Endothelial Cells (Cat No. ME010101021)

For a full catalog of our cells, visit [www.trailbio.com/cells](http://www.trailbio.com/cells)

### Small Molecules

- TrailBio® Y-27632 dihydrochloride (Cat No. TB28056)
- TrailBio® Cytarabine (Ara-C) (Cat No. TB47622)
- TrailBio® SB-431542 (Cat No. TB46416)
- TrailBio® LDN-193189 dihydrochloride (Cat No. TB86388)
- TrailBio® CHIR-99021 monohydrochloride (Cat No. TB54925)

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### Services

- Custom iPSC Differentiation

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