

**TSR3 transfers aminocarboxypropyl group  
from S-adenosylmethionine to N(1)-  
methylpseudouridine-1248 of 18SE rRNA  
yielding N(1)-methyl-N(3)-amino-  
carboxypropylpseudouridine-1248**

May, B., Sharma, S.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

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## Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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## Literature references

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Reactome database release: 88

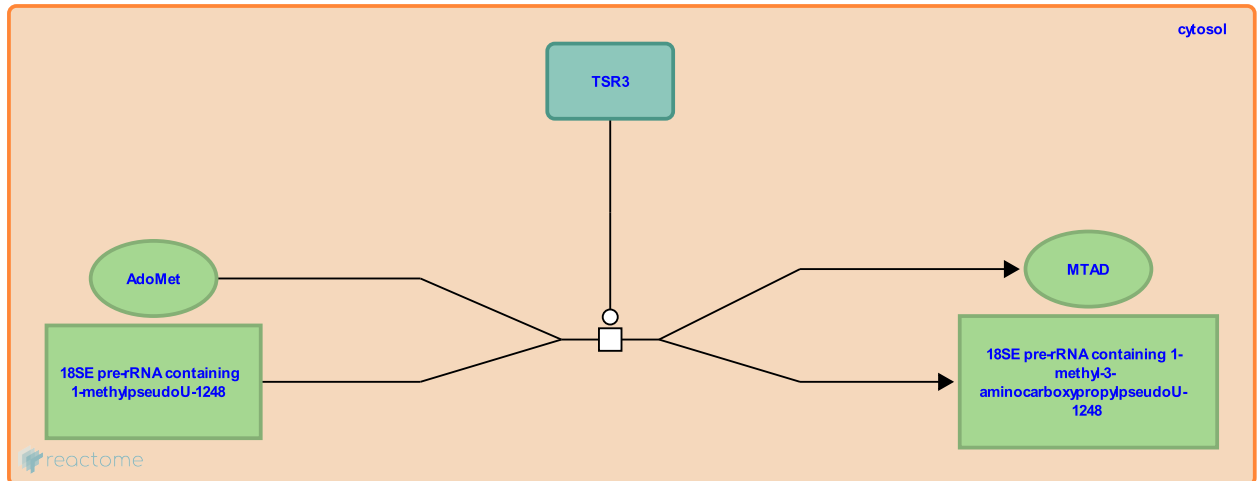
This document contains 1 reaction ([see Table of Contents](#))

## TSR3 transfers aminocarboxypropyl group from S-adenosylmethionine to N(1)-methylpseudouridine-1248 of 18SE rRNA yielding N(1)-methyl-N(3)-aminocarboxypropylpseudouridine-1248 [↗](#)

**Stable identifier:** R-HSA-8868783

**Type:** transition

**Compartments:** cytosol



In the cytoplasm TSR3 transfers an aminocarboxypropyl group from S-adenosylmethionine (AdoMet) to the N(3) position of N(1)-methylpseudouridine at nucleotide 1248 of 18S rRNA yielding N(1)-methyl-N(3)-aminocarboxypropylpseudouridine-1248 (Meyer et al. 2016). Prior to this reaction, the SNORA13 or ACA13 H/ACA snoRNP (homologue of the snR35 snoRNP in yeast) in the nucleus converts uridine-1248 to pseudouridine-1248 and the EMG1 component of the small subunit processome in the nucleus methylates the N(1) position of pseudouridine-1248. The 18SE precursor of 18S rRNA containing N(1)-methylpseudouridine is then exported to the cytosol as part of the 40S pre-ribosomal subunit. TSR3 is believed to act on the 18SE precursor rather than the mature 18S rRNA because interference with the activity of TSR3 results in an accumulation of 18SE precursor (Meyer et al. 2016).

### Literature references

Kötter, P., Wurm, JP., Wöhnert, J., Pogoryelov, D., Sharma, S., Immer, C. et al. (2016). Ribosome biogenesis factor Tsr3 is the aminocarboxypropyl transferase responsible for 18S rRNA hypermodification in yeast and humans. *Nucleic Acids Res.* [↗](#)

### Editions

2016-04-25	Authored, Edited	May, B.
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