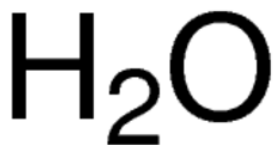


SIGMA-ALDRICH®W4502 **Sigma-Aldrich**

Water

Molecular Biology Reagent

CAS Number [7732-18-5](#) | Linear Formula H_2O | Molecular Weight 18.02 | Beilstein/REAXYS Number 2050024 | EC Number [231-791-2](#) | MDL number [MFCD00011332](#)
PubChem Substance ID [24901995](#)

[SDS](#) [Product Information Sheet \(PDF\)](#) [Specification Sheet \(PDF\)](#) [FTIR \(PDF\)](#)[Similar Products](#)

SKU-Pack Size	Availability	Pack Size	Price (USD)	Quantity
W4502-1L	✓ Available to ship on 10/23/19 - FROM 1 L		55.10	<input type="text" value="0"/> ★ i
W4502-6X1L	✓ Available to ship on 10/23/19 - FROM 6 X 1 L		272.00	<input type="text" value="0"/> ★ i
W4502-10L	✓ Available to ship on 10/23/19 - FROM 10 L		283.00	<input type="text" value="0"/> ★ i

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Product Recommendations

W1754
Water
PCR Reagent

95284
Water
for molecular biology, sterile filtered

3098
Nuclease-free Water

W3500
Water
sterile-filtered, BioReagent, suitable for cell culture

W3513
Water
BioPerformance Certified

Properties

Related Categories

[Biochemicals](#), [Core Bioreagents](#), [DNA & RNA Purification](#), [Gene Expression & Analysis](#), [General Reagents](#), [More...](#)

vapor density	<1 (vs air)
vapor pressure	3 mmHg
InChI Key	XLYOFNOQVPJJNP-UHFFFAOYSA-N
sterility	0.1 µm filtered
refractive index	<i>n</i> _{20/D} 1.34 (lit.)
bp	100 °C (lit.)
density	1.000 g/mL at 3.98 °C (lit.)

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Description

General description

This product is 0.1mm filtered. It is designated as a Molecular Biology Reagent and is suitable for molecular biology applications. This product has been analyzed for the absence of nucleases and proteases, and has undergone bioburden analysis. It has not been treated with diethyl pyrocarbonate (DEPC).

Application

Water has been used-

- in cDNA synthesis and PCR amplification^{[1][5]}
- for the dilution of rumen DNA sample prior to qPCR assay^[2]
- in PCR (polymerase chain reaction) and agarose gel electrophoresis^[3]
- for the elution of RNA during RNA isolation^[4]

Preparation Note

This product is prepared from double distilled and deionized water

Other Notes

Easily compare specifications for Water products with the [Water specification table](#).

Safety Information

Personal Protective Equipment

[Eyeshields, Gloves](#)

RIDADR

NONH for all modes of transport

WGK Germany

nwg

RTECS

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Documents

Certificate of Analysis

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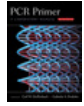
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[W4502 - Product Information Sheet \(50 KB\)](#)

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Protocols & Articles

Articles

Creating Transgenic Mice using CRISPR-Cas9 Genome Editing

While several genome editing tools have been developed in recent years, including zinc finger-based strategies and TALENs (transcription activator-like effector nucleases), none have been as efficient...
 Keywords: Amplification, Cell culture, Enzyme-linked immunosorbent assay, Gene expression, Genetic, Genetics, Immunohistochemistry, Immunology, Nutrition, Polymerase chain reaction, Recombination, Southern blot, Transcription, Transfection, Western blot

Pressure-Temperature Calculator for Solvents

*Calculations provide estimated results based on Antoine's Coefficients and their associated temperature range values. Antoine's Coefficients were obtained from the National Institute of Standards and Technology.

Qualitative Multiplex PCR Assay for Assessing DNA Quality from FFPE Tissues and Sources of Damaged DNA

The assessment of DNA quality is a crucial first step in acquiring meaningful data from formalin-fixed paraffin-embedded (FFPE) tissues, and other sources of damaged DNA. Using intact genomic DNA is ...
 Steve Michalik, Christopher Williams
 LSI Edition 23
 Keywords: AGE, Amplification, Cancer, Cell disruption, Clinical, Degradations, Forensic, Nucleic acid hybridization, Polymerase chain reaction, Polymerase chain reaction - quantitative, Whole genome amplification

Protocols

Animal Tissue DNA-Extraction & WGA Amplification Protocol

Animal tissue is a common source of material when performing genetic analysis. The protocol below is a simple method of extracting DNA from the animal sample. Once the DNA has been isolated, it can be used for...
 Keywords: Absorption, Amplification, Cell disruption, Genetic, Molecular probes, Nucleic acid denaturation, Polymerase chain reaction, Purification, Whole genome amplification

Antibody-Enzyme Mediated Hot Start PCR Protocol

During PCR assay preparation, nonspecific amplification can occur due to binding of PCR primers to nonspecific templates and from formation of primer dimers which result from using other primer molecules...
 Keywords: AGE, Amplification, Buffers, Electrophoresis, Enzyme activity, Gel electrophoresis, Nucleic acid denaturation, Polymerase chain reaction, Size-exclusion chromatography

Assessing DNA Quality from FFPE Tissues and Other Sources of Damaged DNA with Qualitative Multiplex PCR Assay

The assessment of DNA quality is a crucial first step in acquiring meaningful data from formalin-fixed paraffin-embedded (FFPE) tissues, and other sources of damaged DNA. Using intact genomic DNA is ...
 Keywords: AGE, Cell disruption, Degradations, Forensic, Polymerase chain reaction, Polymerase chain reaction - quantitative

Blood Card - Extraction & Amplification WGA Protocol

Blood cards provide the convenience of archiving small volumes of blood. However, many times genomic DNA from these samples is limited, which may hinder the researcher's ability to perform downstream...
 Keywords: Absorption, Amplification, Cell disruption, Molecular probes, Nucleic acid denaturation, Polymerase chain reaction, Purification, Whole genome amplification

Buccal DNA Extraction & WGA Amplification Protocol - Technical Documents

This protocol provides a simple and convenient method to isolate, amplify, and purify genomic DNA from buccal swabs. Buccal swabs are a convenient method of acquiring a DNA sample. Once the DNA is isolated...
 Keywords: Absorption, Amplification, Cell disruption, Molecular probes, Nucleic acid denaturation, Polymerase chain reaction, Purification, Whole genome amplification

Cloning the Gene-of-Interest into a Plasmid Vector

Genetic engineering is used in thousands of laboratories around the world. Given its importance it is remarkable that cloning strategies for many of the popular DNA components are not standardised. Cloning...
 Keywords: Antibiotics, Buffers, Cloning, Degradations, Dialysis, Digestions, Gene expression, Genetic, Genetics, Individual protein Immunoprecipitation, Molecular biology, Nucleic acid annealing, Peptide synthesis, Phosphorylations, Polymerase chain reaction, Precipitation, Purification, Sequencing, Substitutions, transformation

Complete Whole Transcriptome Amplification Kit WTA2 Protocol

Product Description Components Storage/Stability Procedure Troubleshooting Guide Frequently Asked Questions Materials References Publication
 Keywords: Amplification, Buffers, Centrifugation, Cloning, Condensations, DNA purification, Degradations, Microarray Analysis, Molecular probes, Nucleic acid annealing, Polymerase chain reaction, Polymerase chain reaction - quantitative, Polymerization reactions, Purification

Experienced User Protocol | GenElute Mammalian Genomic DNA Miniprep Kit

For experienced users, an abbreviated protocol is listed below. For data, images, troubleshooting and other information, please see the full length protocol page.
 Keywords: PAGE

Extraction & Amplification of whole blood using WGA-Protocol

Whole blood is a common source of material used to perform genetic analysis. Many times genomic DNA isolated from whole blood samples is of low yield. This can hinder the researcher's ability to perform...
 Keywords: Absorption, Amplification, Cell disruption, Molecular probes, Nucleic acid denaturation, Polymerase chain reaction, Purification, Whole genome amplification

GenElute Bacterial Genomic DNA Kit Protocol

Our GenElute™ Bacterial Genomic DNA Kit provides a simple and convenient way to isolate pure DNA from a variety of cultured bacteria. The kit contains all of the reagents needed to isolate and purify...
 Keywords: AGE, Amplification, Cell disruption, Centrifugation, Degradations, Digestions, Electrophoresis, Evaporation, Gel electrophoresis, Molecular biology, Nucleic acid denaturation, Phase transitions, Polymerase chain reaction, Precipitation, Pulsed field gel electrophoresis

GenElute Bacterial Genomic DNA Kit, Experienced User Protocol

For experienced users, an abbreviated protocol is listed below. For data, images, troubleshooting and other information.

GenElute Mammalian Genomic DNA Miniprep Kit Protocol

The GenElute™ Mammalian Genomic DNA Miniprep Kit provides a simple and convenient way to isolate pure genomic DNA from a variety of cultured cells, tissues (including rodent tails), and fresh whole blood...
 Keywords: AGE, Amplification, Anticoagulants, Cell disruption, Centrifugation, DNA purification, Degradations, Digestions, Electrophoresis, Evaporation, Gel electrophoresis, Molecular biology, Nucleic acid denaturation, Phase transitions, Polymerase chain reaction, Precipitation, Purification, Sample preparations, Sequencing

GenElute Plant Genomic DNA Miniprep Kit Protocol (G2N10, G2N70, G2N350)

Several micrograms of DNA can be obtained from up to 100 mg of fresh tissue or 10 mg of freeze-dried material in less than an hour. The purified DNA is greater than 20 kb in length and can be used in...
 Keywords: AGE, Amplification, Cell disruption, Centrifugation, Electrophoresis, Evaporation, Filtration, Gel electrophoresis, Molecular biology, Phase transitions, Polymerase chain reaction, Precipitation, Purification

GenElute™ Blood Genomic DNA Kit Protocol (NA2010, NA2020)

Our GenElute™ Blood Genomic DNA Kit provides a simple and convenient way to isolate pure genomic DNA from fresh or aged (older than 24 hours) whole blood. The kit combines the advantages of silica bi...

Keywords: AGE, Addition reactions, Amplification, Anticoagulants, Cell disruption, Centrifugation, Digestions, Electrophoresis, Evaporation, Gel electrophoresis, Molecular biology, Nucleic acid denaturation, Phase transitions, Polymerase chain reaction, Precipitation, Purification, Sequencing

GenomePlex Complete Whole Genome Amplification Kit

Product Description Components Storage Procedure Troubleshooting Guide Frequently Asked Questions Disclaimer Automation Protocol Posters and Publications Reagents Required

Keywords: Absorption, Amplification, Centrifugation, Diagnostic, Dialysis, Genomics, Molecular biology, Molecular probes, Nucleic acid denaturation, Nucleic acid hybridization, Polymerase chain reaction, Polymerase chain reaction - quantitative, Purification, Sequencing, Whole genome amplification

GenomePlex Whole Genome Amplification Kit Protocol

Product Description Components Storage/Stability Procedure Troubleshooting Guide Frequently Asked Questions Precautions and Disclaimer Materials References

Keywords: Absorption, Amplification, Centrifugation, Diagnostic, Dialysis, Genomics, Molecular biology, Molecular probes, Nucleic acid denaturation, Nucleic acid hybridization, Polymerase chain reaction, Polymerase chain reaction - quantitative, Purification, Whole genome amplification

GenomePlex® WGA Reamplification Kit Protocol (WGA3)

The GenomePlex WGA Reamplification Kit allows subsequent reamplifications of the WGA product with little genetic bias. This kit contains an optimized enzyme that decreases the background in the reac...

Keywords: Amplification, Diagnostic, Dialysis, Genetic, Genomics, Molecular probes, Nucleic acid denaturation, Nucleic acid hybridization, Polymerase chain reaction, Polymerase chain reaction - quantitative, Purification, Whole genome amplification

Imprint Methylated DNA Quantification

Note: Storage Temperature - see Storage/Stability section for individual component storage conditions

Keywords: Cardiovascular, Degradations, Diseases, Gene expression, Methylations, Molecular biology

Multiplex qPCR Protocol

In the PCR Technologies Guide, the requisite components and quality control requirements for qPCR experiments were described in detail. With those in mind, the following is a protocol that can be use...

Keywords: Nucleic acid annealing, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography

MystiCq® MicroRNA® Quantitation System

Technology Overview Workflow Background Protocols miRNA isolation cDNA synthesis miRNA qPCR Advanced information Product selection guides Troubleshooting

Keywords: AGE, Amplification, Buffers, Cell disruption, Centrifugation, Degradations, Diagnostic, Digestions, Diseases, Electrophoresis, Gel electrophoresis, Gene expression, Homogenization, Microarray Analysis, Molecular biology, Nucleic acid annealing, Nucleic acid denaturation, PAGE, Polymerase chain reaction, Polymerase chain reaction - quantitative, Precipitation, Purification, RNA purification, Sample preparations, Separation, Solvents, Titrations

Plant DNA extraction & WGA Amplification-protocol

Extracting DNA from plant tissue is a complicated process due to the tough cell wall that surrounds most plant cells. Genomic DNA from plant material can be damaged during the extraction process, res...

Plasma Serum DNA extraction & WGA Amplification Protocol

Whole genome amplification (WGA) of plasma and serum DNA presents a unique challenge due to the small amount of nucleic acid in such samples. One must use a robust DNA purification scheme capable of ...

Keywords: Absorption, Amplification, Cell disruption, Centrifugation, DNA purification, Molecular biology, Molecular probes, Nucleic acid denaturation, Polymerase chain reaction, Purification, Whole genome amplification

Primer Concentration Optimization Protocol

Optimization of qPCR conditions is important for the development of a robust assay. Indications of poor optimization are a lack of reproducibility between replicates as well as inefficient and insens...

Keywords: Nucleic acid annealing, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography

Primer Optimization Using Temperature Gradient Protocol

One approach to assay optimization is to determine the optimum annealing temperature (Ta) of the primers by testing identical reactions containing a fixed primer concentration, across a range of anne...

Keywords: Amplification, Nucleic acid annealing, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography

Restriction Enzyme Cloning Manual Buffer Recipes

Tip 1: DNA is quite stable in TE buffer at 4°C. If stored in elution buffer or water then freezing at -20 °C is advised.

Keywords: Phase transitions, Sequencing, Sterilizations

Reverse Transcription Protocol (One-step Probe Detection)

In some cases it is preferable to measure the target transcript directly, without preparing cDNA from the entire RNA sample. Such situations may include measurements on highly degraded RNA or when th...

Keywords: Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography, Transcription

Reverse Transcription Protocol (One-step SYBR Green I Dye Detection)

In the example given below, the primer concentrations can be adjusted according to the results of optimization procedures (see Primer Concentration Optimization, Primer Optimization Using Temperature...

Keywords: Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography

Reverse Transcription Using ReadyScript cDNA Synthesis RDRT Protocol

Place components on ice. Mix, and then briefly centrifuge to collect contents at the bottom of the tube

Keywords: Amplification, Digestions, Gene expression, Polymerase chain reaction, Polymerase chain reaction - quantitative, Precipitation, Purification, RNA purification, Transcription

SPUD Assay for Detection of Assay Inhibitors Protocol

The SPUD assay is one option for identification of inhibitors that may be present in RNA or DNA samples. The assay is particularly useful when a large number of samples are to be analyzed or when tar...

Keywords: Amplification, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography

SYBR® Green I Dye Quantitative PCR Protocol

Although quantitative PCR uses the same basic concept as traditional PCR, the reactions differ in that the amplicons are generally smaller and are detected indirectly using an additional dye or label...
 Keywords: Gene expression, Nucleic acid annealing, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography

Saliva DNA Extraction & WGA Amplification Protocol

Whole Genome Amplification can be performed on DNA extracted in many ways. We offer many products for DNA extraction, including the GenElute™ Blood Genomic DNA Kit (NA2010), GenElute Mammalian Genomi...

Keywords: Absorption, Amplification, Molecular probes, Nucleic acid denaturation, Polymerase chain reaction, Purification, Whole genome amplification

Selecting Correctly Expressing Recombinants

Blue / White colony screening is a strategy to quickly and easily distinguish between recombinant and non-recombinant colonies. It requires a special vector and a special strain of E. coli. It is par...

Keywords: AGE, Amplification, Antibiotics, Cell disruption, Centrifugation, Cloning, Degradations, Detergents, Diagnostic, Digestions, Electrophoresis, Gel electrophoresis, Molecular biology, Peptide synthesis, Phase transitions, Polymerase chain reaction, Precipitation, Purification, Sequencing, Transfection, transformation

SeqPlex RNA Amplification Kit Protocol

The SeqPlex RNA Amplification kit provides a method for amplification of total RNA or isolated mRNA prior to entry into the workflows of the commonly used deep sequencing platforms. Microgram quantit...

Keywords: Amplification, Centrifugation, Condensations, Degradations, Electrophoresis, Eliminations, Enzyme activity, Gene expression, Genomics, Microarray Analysis, Molecular probes, Nucleic acid annealing, Nucleic acid denaturation, Peptide synthesis, Polymerase chain reaction, Polymerase chain reaction - quantitative, Polymerization reactions, Purification, Sample preparations, Sequencing, Sonication

Standard Reverse Transcription Protocol (Two-step)

Reverse transcription (RT) is the process of converting RNA to cDNA using a reverse transcriptase enzyme and dNTPs.

Keywords: Amplification, Polymerase chain reaction, Polymerase chain reaction - quantitative, Transcription

The 3'/5' Assay for Analysis of RNA Integrity Protocol

The 3'/5' integrity assay is a potential first step in the identification of RNA degradation. The assay is particularly useful when a large number of samples are to be analyzed or when the degradatio...

Keywords: Amplification, Degradations, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography, Transcription

TransPlex® Whole Transcriptome Amplification Protocol

TransPlex, a Whole Transcriptome Amplification (WTA) method, allows for representative amplification of nanogram quantities of total RNA in less than 4 hours without 3'-bias. Microgram quantities of ...

Keywords: Amplification, Centrifugation, Cloning, Condensations, DNA purification, Gene expression, Genomics, Microarray Analysis, Molecular biology, Molecular probes, Nucleic acid annealing, Nucleic acid hybridization, Polymerase chain reaction, Polymerase chain reaction - quantitative, Polymerization reactions, Purification, Sequencing

WGA4 - GenomePlex® Single Cell Whole Genome Amplification Kit

Product Description Reagents Provided Storage/Stability Procedure References Troubleshooting Guide FAQs Posters and Publications Downstream applications Gel Electrophoresis & qPCR CGH...

Keywords: Amplification, Cell disruption, Centrifugation, Degradations, Diagnostic, Electrophoresis, Gel electrophoresis, Genomics, Microarray Analysis, Molecular biology, Molecular probes, Nucleic acid denaturation, Nucleic acid hybridization, Polymerase chain reaction, Polymerase chain reaction - quantitative, Purification, Whole genome amplification

qPCR Efficiency Determination Protocol

Once an assay has been optimized, it is important to verify the reaction efficiency. This information is important when reporting and comparing assays. In this example protocol, the assay efficiency ...

Keywords: Amplification, Gene expression, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography, Transcription

qPCR Gene Expression/Copy Number Analysis Using SYBR Green I Dye Detection Protocol

Measuring a target quantity relative to one or more stable reference genes using SYBR Green I dye detection is a common application of qPCR. Below is a standard protocol that can be adapted to specif...

Keywords: Nucleic acid annealing, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography, Transcription

qPCR Gene Expression/Copy Number/SNP Analysis Using Probe Detection Protocol

The most common application for qPCR is the measurement of a gene transcript or copy number quantity relative to one or more reference genes using probe detection. The reactions may be designed such ...

Keywords: Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography, Transcription

qPCR Reference Gene Selection Protocol

Analysis of gene expression data requires a stable reference or loading control. This reference is usually one or more reference genes. Suitable reference genes are those which are unaffected by diff...

Keywords: Gene expression, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography, Transcription

qPCR Using a Single Detection Probe Protocol

In the PCR Technologies Guide, the requisite components and quality control requirements for qPCR experiments were described in detail. With those in mind, the following is a protocol that can be use...

Keywords: Nucleic acid annealing, Nucleic acid denaturation, Polymerase chain reaction, Polymerase chain reaction - quantitative, Size-exclusion chromatography

Related Content

Pressure-Temperature Nomograph Interactive Tool

Use the interactive controls above to simplify calculations and improve the efficiency of your distillation or evaporation requirements.

Keywords: Evaporation, Vaporization

Properties of Solvents Table

The table below presents the physical characteristics of common solvents. Easily reference or compare solvent properties like boiling point, density, and refractive index all from one list.

Keywords: Gas chromatography, Green chemistry, High performance liquid chromatography, Melting, Solvents

Peer-Reviewed Papers

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 Polymorphic exact tandem repeat A (PETRA): a newly defined lineage of mycobacterium tuberculosis in israel originating predominantly in Sub-Saharan Africa. Freidlin PJ et al Journal of Clinical Microbiology 47(12), 4006-4020, (2009)
 Gene expression signals involved in ischemic injury, extracellular matrix composition and fibrosis defined by global mRNA profiling of the human left ventricular myocardium. Gabrielsen A et al Journal of Molecular and Cellular Cardiology 42(4), 870-883, (2007)
 Presence of viral genomes in mineral water: a sufficient condition to assume infectious risk? Gassilloud B et al Applied and Environmental Microbiology 69(7), 3965-3969, (2003)

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M Grusdat et. al
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Mary A Rodgers et. al
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 Linear ubiquitination is a newly discovered posttranslational modification that is currently restricted to a small number of known protein substrates. The linear ubiquitination assembly complex (LUBAC), consisting of HOIL-1L, HOIP, and Sharpin, has been...[Read More](#)

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 Checkpoint kinase 2 (Chk2) is the main effector kinase of ataxia telangiectasia mutated (ATM) and responsible for cell cycle regulation. ATM signaling has been shown to upregulate interferon-regulating factor-1 (IRF-1), a transcription factor also expressed in...[Read More](#)

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Philippe Robert et. al
 Investigative radiology, 50(8), undefined (2015-6-25)
 To prospectively compare in healthy rats the effect of multiple injections of macrocyclic (gadoterate meglumine) and linear (gadodiamide) gadolinium-based contrast agents (GBCAs) on T1-weighted signal intensity in the deep cerebellar nuclei (DCN), in...[Read More](#)

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 Biochimica et biophysica acta, 1837(1), undefined (2013-8-28)
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