# SAE1 Cell Lysate – Tissue Lysate

## PRODUCT OVERVIEW

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| **Product Name** | SAE1, Cell Lysate |
| **Full Product Name** | Human SAE1 Baculovirus-Insect cells Overexpression Lysate |
| **Product Gene Name** | SAE1 cell lysate |
| **Product Synonym Names** | Human SAE1 Insect Cell Lysate (WB positive control); SUMO1 activating enzyme subunit 1; Human AOS1 Overexpression Lysate; Human HSPC140 Overexpression Lysate; Human SUA1 Overexpression Lysate; Human UBLE1A Overexpression Lysate |
| **Sequence** | Met1-Lys34 6 |
| **Host** | Baculovirus-Insect cells |
| **Form/Format** | 1x Sample Buffer (1x modified RIPA buffer+1x SDS loading buffer).<br>Modified RIPA Lysis Buffer: 50 mM Tris-HCl pH 7.4, 150 mM NaCl, 1mM EDTA, 1% Triton X-100, 0.1% SDS, 1% Sodium deoxycholate, 1mM PMSF. |
| **Preparation and Storage** | Store at 4 degree C for up to twelve months from date of receipt. After re-dissolution, aliquot and store at -80 degree C for up to twelve months. Avoid repeated freeze-thaw cycles.<br>Samples are stable for up to twelve months from date of receipt. |
| **Molecular Weight** | 38,450 Da |
| **Sequence Positions** | 348aa |
| **Chromosome Location** | Chromosome: 19; NC_000019.9 (47634080..47713893). Location: 19q13.32 |
| **OMIM** | 613294 |
| **3D Structure** | ModBase 3D Structure for Q9UBE0 |
| **Species** | Human |
| **Recommend Usage** | 1. Centrifuge the tube for a few seconds and ensure the pellet at the bottom of the tube.**2. Re-dissolve the pellet using 200uL pure water and boil for 2-5 min.** |
| **Sequence Construction** | A DNA sequence encoding the human SAE1 (Q9UBE0) (Met1-Lys346) was expressed and purified. |
| **Preparation Method** | Cell lysate was prepared by homogenization of the over-expressed cells in ice-cold modified RIPA Lysis Buffer with cocktail of protease inhibitors. Cell debris was removed by centrifugation. Protein concentration was determined by Bradford assay (protein assay, Microplate Standard assay). The cell lysate was boiled for 5 min in 1 x SDS loading buffer (50mM Tris-HCl pH 6.8, 12.5% glycerol, 1% sodium dodecylsulfate, 0.01% bromophenol blue) containing 5% b-mercaptoethanol, and lyophilized. |
| **Applications Tested/Suitable for SAE1 cell lysate** | Western Blot (WB) |
| **Application Notes for SAE1 cell lysate** | WB: Use at an assay dependent dilution. |
| **Related Product Information for SAE1 cell lysate** | SAE1 belongs to the ubiquitin-activating E1 family. It is a heterodimer that acts as a E1 ligase for SUMO1, SUMO2, SUMO3, and probably SUMO4. It functions as a UBLI E1 ligase mediating the ATP-dependent activation of UBL1. SAE1 binds with UBLE1A and UBLE1B to form a heterodimer which can bind UBL1. SAE1 also regulates ATP-dependent activation of SUMO proteins and formation of a thioester with a conserved cysteine residue on SAE2. SAE1 and UBA2 form a heterodimer that functions as a SUMO-activating enzyme for the sumoylation of proteins.<br><br>This Human SAE1 overexpression lysate was created in Baculovirus-Insect cells and intented for use as a Western blot (WB) positive control. Purification of SAE1 protein from the overexpression lysate was verified. |

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| **Product References and Citations for SAE1 cell lysate** | Gong L, et al. (1999) Molecular cloning and characterization of human AOS1 and UBA2, components of the sentrin-activating enzyme complex. FEBS Lett. 448(1):185-9.Lois LM, et al. (2005) Structures of the SUMO E1 provide mechanistic insights into SUMO activation and E2 recruitment to E1. EMBO J. 24(3):439-51.Tatham MH, et al. (2001) Polymeric chains of SUMO-2 and SUMO-3 are conjugated to protein substrates by SAE1/SAE2 and Ubc9. J Biol Chem. 276(38):35368-74. |
| **Other Notes** | Small volumes of SAE1 cell lysate vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply. |
| **Searchable Terms for SAE1 purchase** | MBS8115307 is a cell lysate targeting SAE1. Also known as Human SAE1 Baculovirus-Insect cells Overexpression Lysate. Host: Baculovirus-Insect cells. |

## ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for SAE1. It may not necessarily be applicable to this product.

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| **NCBI GI #** | 225543285 |
| **NCBI GeneID** | 10055 |
| **NCBI Accession #** | NP_001139185.1 |
| **UniProt Primary Accession #** | Q9UBE0 |
| **UniProt Secondary Accession #** | O95717; Q9P020; B2RDP5; B3KMQ2; F5GXX7; G3XAK6 |
| **UniProt Related Accession #** | Q9UBE0 |
| **GenBank Nucleotide #** | NM_001145713.1 |
| **NCBI Official Full Name** | SUMO-activating enzyme subunit 1 isoform b |
| **NCBI Official Synonym Full Names** | SUMO1 activating enzyme subunit 1 |
| **NCBI Official Symbol** | SAE1 |
| **NCBI Official Synonym Symbols** | AOS1; SUA1; UBLE1A; HSPC140 |
| **UniProt Protein Name** | SUMO-activating enzyme subunit 1 |
| **UniProt Synonym Protein Names** | Ubiquitin-like 1-activating enzyme E1A |
| **Protein Family** | SUMO-activating enzyme |
| **UniProt Gene Name** | SAE1 |
| **UniProt Synonym Gene Names** | AOS1; SUA1; UBLE1A |
| **UniProt Entry Name** | SAE1_HUMAN |
| **NCBI Protein Information** | SUMO-activating enzyme subunit 1; activator of SUMO1; SUMO-1 activating enzyme subunit 1; sentrin/SUMO-activating protein AOS1; SUMO-1 activating enzyme E1 N subunit; ubiquitin-like 1-activating enzyme E1A; ubiquitin-like protein SUMO-1 activating enzyme |
| **NCBI Summary for SAE1** | Posttranslational modification of proteins by the addition of the small protein SUMO (see SUMO1; MIM 601912), or sumoylation, regulates protein structure and intracellular localization. SAE1 and UBA2 (MIM 613295) form a heterodimer that functions as a SUMO-activating enzyme for the sumoylation of proteins (Okuma et al., 1999 [PubMed 9920803]).[supplied by OMIM, Mar 2010] |

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| **UniProt Comments for SAE1** | UBLE1A: The heterodimer acts as a E1 ligase for SUMO1, SUMO2, SUMO3, and probably SUMO4. It mediates ATP-dependent activation of SUMO proteins followed by formation of a thioester bond between a SUMO protein and a conserved active site cysteine residue on UBA2/SAE2. Belongs to the ubiquitin-activating E1 family.<br><br>Protein type: EC 6.3.2.19; Ubiquitin ligase; Ubiquitin conjugating system<br><br>Chromosomal Location of Human Ortholog: 19q13.32<br><br>Cellular Component: nucleoplasm; intracellular membrane-bound organelle; cytosol; nucleus<br><br>Molecular Function: protein C-terminus binding; ATP-dependent protein binding; SUMO activating enzyme activity; protein binding; protein heterodimerization activity; enzyme activator activity; ubiquitin activating enzyme activity<br><br>Biological Process: positive regulation of catalytic activity; cellular protein metabolic process; protein sumoylation; regulation of mitotic cell cycle; protein ubiquitination; SMT3-dependent protein catabolic process; post-translational protein modification |
| **Research Articles on SAE1** | **1.** Data indicate the role of anti-SUMO activating enzyme SAE1 and SAE2 antibody as marker of dermatomyositis. |
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