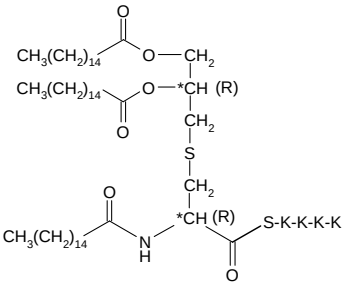
Product Information
R-Pam$_3$Cys-SKKKK

For Research Purposes only. Not for use in Humans

Product	L2048
Chemical name	N-Palmitoyl-S-[2,3-bis(palmitoyloxy)-(2*R*)-propyl]-(*R*)-cysteinyl-(*S*)-seryl-(*S*)-lysyl-(*S*)-lysyl-(*S*)-lysyl-(*S*)-lysine x 3 CF_3COOH
Synonyms	*R*-Pam$_3$Cys-Ser-(Lys)$_4$ x 3 TFA, *R*-Pam$_3$Cys-SK$_4$ x 3 TFA, *R*-P$_3$CSK$_4$ x 3 TFA
MW / Formula	1509.6 • 342.1 / $C_{81}H_{156}N_{10}O_{13}S$
Description	 Lipopeptides are valuable tools for basic research in innate and acquired immunity. Synthetic lipopeptides like Pam$_3$Cys-SKKKK are described to elicit cellular responses through TLR1/TLR2 heterodimers which involves downstream NF-κB activation and cytokine release. They are based on the structure of the N-terminus of bacterial lipoproteins and are also well known as potent immune adjuvants. The **naturally occurring *RR*-stereoisomer** of Pam$_3$Cys, ***R*-Pam$_3$Cys**, is biologically more active than the *RS*-stereoisomer N-palmitoyl-S-[2,3-bis(palmitoyloxy)-2(*S*)-propyl]-(*R*)-cysteine present in *S*-Pam$_3$Cys-SKKKK (product code L2049). Pam$_3$Cys-SKKKK (product code L2000) is a mixture of both stereoisomers. The crystal structure of the TLR1/TLR2 heterodimer with the synthetic ligand *R*-Pam$_3$Cys-SKKKK has been elucidated.
Packaging Reconstitution Storage	The lipopeptide is provided as a lyophilised, colourless powder without any additives. It can be shipped at room temperature and should be stored at 4°C. *R*-Pam$_3$Cys-SKKKK can be reconstituted in endotoxin-free water (1 mg/ml stock solution). Through the use of either a homogeniser or sonicator, a homogenous solution or emulsion can be prepared. For further dilutions water, saline, buffer (pH ≤ 7.4) or media can be used. Depending on the sensitivity of the *in vitro* assay, the recommended working concentration for specific stimulation of innate immunity via TLR1/TLR2 heterodimers is 10 – 100 nM (0.015 – 0.15 µg/ml). After reconstitution, the solution should be aliquoted and stored at or below –20°C. Repeated thawing and freezing should be avoided.
References	K. Hantke, V. Braun (1973) Covalent binding of lipid to protein. Diglyceride and amide-linked fatty acid at the N-terminal end of the murein-lipoprotein of the *Escherichia coli* outer membrane. Eur. J. Biochem. 34, 284–296. K. Deres, H.-J. Schild, K.-H. Wiesmüller, G. Jung, H.-G. Rammensee (1989) In vivo Priming of Virus Specific Cytotoxic T Lymphocyte with Synthetic Lipopeptide Vaccine. Nature 342, 561-564. J. Metzger, K.-H. Wiesmüller, R. Schaude, W. G. Bessler, G. Jung (1991) Synthesis of Novel Immunologically Active Tripalmitoyl-S-glycerylcysteinyl Lipopeptides as Useful Intermediates for Immunogen Preparations. Int. J. Pept. Protein Res. 37, 46-57. K.-H. Wiesmüller, W. G. Bessler, G. Jung (1992) Solid Phase Peptide Synthesis of Lipopeptide Vaccines Eliciting Epitope specific B-, T-Helper and T-Killer Cell Response. Int. J. Pept. Protein Res. 40, 255-260. A. O. Aliprantis, R. B.Yang, M. R. Mark, S. Suggett, B. Devaux, J. D. Radolf, G. P. Klimpel, P. Godowski, A. Zychlinsky (1999) Cell Activation and Apoptosis by Bacterial Lipoproteins Through Toll-like Receptor-2. Science 285, 736-739. S. Akira S. Mammalian (2003) Toll-like receptors. Curr. Opin. Immunol. 15, 5–11. S. Voss, A. J. Ulmer, G. Jung, K.-H. Wiesmüller, R. Brock (2007) The activity of lipopeptide TLR2 agonists critically depends on the presence of solubilizers. Eur. J. Immunol. 37(12), 3489-3498. H. Kumar, T. Kawai, S. Akira (2009) Toll-like receptors and innate immunity. Biochem. Biophys. Res. Comm. 388, 621–625. D. T. Nguyen, L. de Witte, M. Ludlow, S. Yüksel, K.-H. Wiesmüller, T. B. Geijtenbeek, A. D. Osterhaus, R. L. de Swart (2010) The Synthetic Bacterial Lipopeptide Pam$_3$CSK$_4$ Modulates Respiratory Syncytial Virus Infection Independent of TLR Activation. PLoS Pathog. 19, 6(8) pii:e1001049. A. Burger-Kentischer, I. S. Abele, D. Finkelmeier, K.-H. Wiesmüller, S. Rupp (2010) A new cell-based innate immune receptor assay for the examination of receptor activity, ligand specificity, signalling pathways and the detection of pyrogens. J. Immunol. Methods 30, 93-103.
Product citations	M. S. Jin, S. E. Kim, J. Y. Heo, M. E. Lee, H. M. Kim, S.-G. Paik, H. Lee, J.-O. Lee (2007) Crystal Structure of the TLR1-TLR2 Heterodimer Induced by Binding of a Tri-Acylated Lipopeptide. Cell 130, 1071–1082.