DCD(63-110) is processed to DCD(63-109)

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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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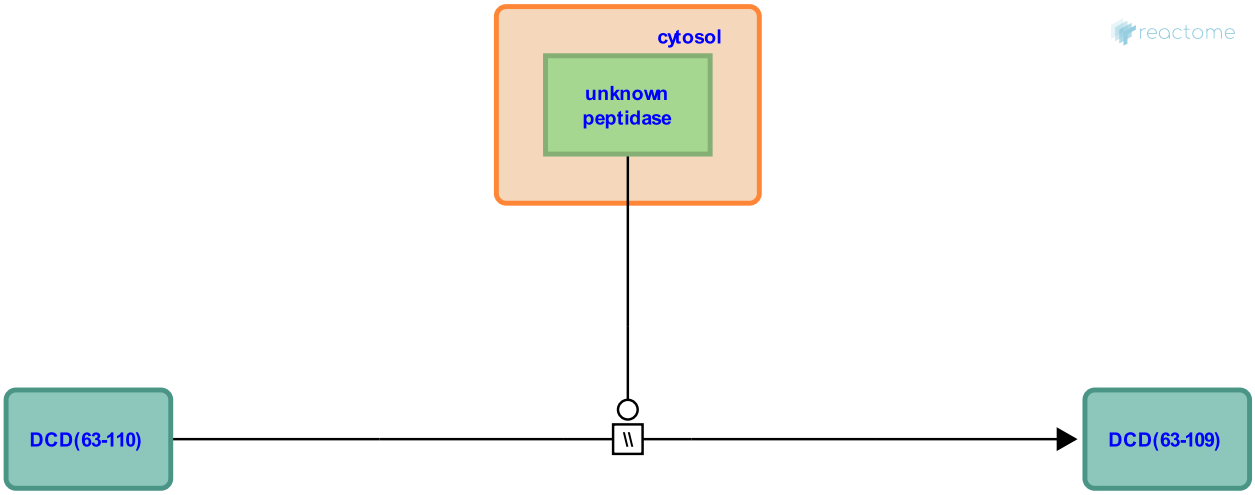
Stable identifier: R-HSA-6803060

Type: omitted

Compartments: extracellular region



A 47aa dermcidin (DCD)-derived peptide (DCD(63-109), also known as as DCD-1) is an antimicrobial peptide with a negative net charge and acidic pI (Schittek B 2012). Like other antimicrobially active DCD-derived peptides, DCD(63-109) is produced in human eccrine sweat through proteolytic processing of a 110-amino acid (aa) precursor protein (Schittek B et al. 2001; Rieg S et al. 2006). DCD-derived peptides are able to bind to the bacterial surface, however they do not exert their activity by permeabilizing bacterial membranes (Senyürek et al. 2009, Steffen H et al. 2006). The negative net charge of DCD(63-109) did not significantly affected the peptide binding to bacterial-mimetic membranes (Jung et al. 2010, Steffen et al. 2006; Senyurek et al. 2009). Spin-down assays of DCD(63-109) and other DCD peptides revealed that the affinity with which dermcidin binds to bacterial-mimetic membranes is primarily dependent on its amphipathic alpha-helical structure and its length (>30 residues)(Jung et al. 2010).

DCD(63-109) shows a broad spectrum of antimicrobial activity against Gram-positive (Staphylococcus aureus, Enterococcus faecalis, Staphylococcus epidermidis, Listeria monocytogenes) and Gram-negative bacteria (Escherichia coli, Pseudomonas putida, Salmonella typhimurium) as well as Candida albicans (Cipakova I et al. 2006, Lai YP et al. 2005, Schittek B et al. 2001, Steffen H et al. 2006, Vuong C et al. 2004). The activity of the DCD(63-109) was maintained over a broad pH range and in high salt concentrations that resembled the conditions in human sweat (Schittek B et al. 2001).

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