IPD Project Details

Project ID: IPD6501

Project Title: Interactome analysis of the CgHog1 MAPK under varied-iron conditions in Candida glabrata

Description: The objective of the project is to identify proteins that interact with CgHog1 under low-iron, regular-iron and high-iron growth conditions in the pathogenic yeast Candida glabrata.

Principal Investigator: Dr Rupinder Kaur

PI Affiliation: Laboratory of Fungal Pathogenesis, Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, India

Sample Preparation: For CgHog1 interactome analysis, the Cghog1? mutant expressing either the N-terminally SFB (S protein-Flag-Streptavidin-binding peptide)-tagged CgHog1 (Cghog1?/CgSFB-HOG1) or the SFB tag (Cghog1?/V) was grown in 50 µM BPS (bathophenanthroline disulfonate; an extracellular iron chelator)-containing CAA medium for 12 h. After washes, the iron-starved Cghog1?/CgSFB-HOG1 cells were further incubated in the CAA (regular-iron) medium, and CAA medium supplemented with either 50 µM BPS (low-iron), or sodium ascorbate (1 mM) plus ferrous ammonium sulfate (500 µM) (high-iron) media for 2 h at 30ºC. The Cghog1?/V cells were incubated only in the CAA (regular-iron) medium as a control. After 2 h growth, cells were harvested and lysed in NETN buffer [Tris-HCl (20 mM; pH 8.0), NaCl (100 mM), EDTA (1 mM) and Nonidet P-40 (0.5%)] using glass beads. Whole cell lysates were subjected to tandem affinity purification with streptavidin-agarose and S-protein-agarose beads. Briefly, 8 mg protein lysate per sample was first incubated with streptavidin beads for 2 h at 4°C, followed by elution in the biotin (2 mg/ml)-containing buffer. The resultant supernatant was further incubated with S-protein agarose beads for 2 h at 4°C. After washes, beads were boiled, and proteins were resolved on a 10% SDS-PAGE gel till bromophenol blue dye in the sample buffer entered about 3 mm into the gel. The gel was stained with Coomassie Brilliant Blue and destained. The portion of the gel, that displayed protein bands, was excised, placed in water and was sent to the Taplin Biological Mass Spectrometry (MS) facility at Harvard Medical School, Boston, USA for protein identification via LC-MS/MS analysis.

Peptide Separation: At the Taplin facility, gel pieces were subjected to in-gel trypsin

digestion followed by microcapillary LC-MS/MS (Liquid chromatography-tandem mass spectrometry) using the LTQ Orbitrap Velos Pro ion-trap mass spectrometer. Sample information is detailed below: Cghog1?/CgSFB-HOG1_ grown in CAA medium_Replicate-1 (Raw name-69284 and Search name-42404), Cghog1?/CgSFB-HOG1_ grown in CAA medium containing sodium ascorbate and ferrous ammonium sulfate _Replicate-1 (Raw name-69285 and Search name-42403), Cghog1?/CgSFB-HOG1_ grown in CAA medium containing BPS _Replicate-1 (Raw name-69286 and Search name-42402), Cghog1?/V_ grown in CAA medium (Raw name-69287 and Search name-42401), Cghog1?/CgSFB-HOG1_ grown in CAA medium_Replicate-2 (Raw name-69288 and Search name-42414), Cghog1?/CgSFB-HOG1_ grown in CAA medium containing sodium ascorbate and ferrous ammonium sulfate _Replicate-2 (Raw name-69289 and Search name-42413), Cghog1?/CgSFB-HOG1_ grown in CAA medium containing BPS _Replicate-2 (Raw name-69290 and Search name-42412).

Protein Characterization: All generated fragmentation patterns were acquired and searched against the UniProt C. glabrata reference proteome database using the SEQUEST software to determine the peptide sequences. The data was filtered to 1-2% peptide false discovery rate.

Experiment Type: Bottom-up

Species: Data in species_details No Data

Tissue: Unknown No Data

Cell Type: Unknown No Data

Disease: Unknown No Data

Instrument Details: Data in instrument_details Data in instrument_details

Protein Modifications: dehydrated residue

PubMed ID: