

Melatonin (N-acetyl-5-methoxytryptamine) is an evolutionarily ancient and widely conserved hormone produced by the tryptophan biosynthesis pathway. The hormone is renowned for its clinical use as a sleep-aid drug in humans, yet research into its molecular interactions leave much to be uncovered. Despite ongoing pharmaceutical research on human melatonin receptors MT1 and MT2, a simple eukaryotic model organism with orthologous G protein-coupled receptors (GPCRs) to MT1/MT2 has yet to be identified. Such a finding could provide a powerful alternative to mammalian model organisms, possessing conserved mechanisms for molecular effectors of melatonin such as antioxidation and circadian regulation. In this study, 43 known GPCRs in the classic fungal chronobiology system, *Neurospora crassa*, were structurally predicted using AlphaFold2 and compared to the morphology of MT1/MT2 using Dali protein alignment. We identified a putative gene, *gpr3*, whose structure was most similar to human melatonin receptors and lacked a response to melatonin when tested experimentally. This is the first identification of a novel melatonin-related receptor in fungi and highlights the usefulness of AlphaFold2 paired with Dali for the identification of other novel genes across kingdoms.