Unfolding | Clusters is a music and visual media installation modelled from published scientific data related to the pathophysiology of amyotrophic lateral sclerosis (ALS), with a focus on biomolecular processes related to the Superoxide Dismutase–1 (SOD1) protein mutation and misfolding. ALS (also referred to as Motor Neurone Disease) is a rare neurodegenerative disorder of the nervous system where motor neurons degenerate and die, leading to progressive paralysis and weakness in patients.

The work aims to create an engaging multimodal experience, to raise awareness in the greater public about the disease and its scientific process. Data obtained from Nuclear Magnetic Resonance of the SOD1 protein are mapped to sonic timbres and melodic patterns in a video–synchronous spatial speaker array that represents the nervous system. The accompanying video presents cues which show neural pathways as they are activated, whilst the associated neuromuscular junction is sounded on corresponding speakers in the array. Over time, the timbre, rhythm, and spatialisation of these sonic patterns gradually changes to reflect the progress of the protein unfolding and aggregation. Video synchronicity gradually degrades as the nervous system loses control over the muscles and sclerosis hardens the affected nerves of the spinal cord. The spatialisation in the 3D speaker array, initially a fully immersive sound world, eventually shrinks completely, reflecting the patients’ loss of movement and motor function.

This paper describes the musical criteria and constraints applied to the data mapping to obtain a musification of the data. Recent improvements to the installation and layout are discussed, motivated by feedback from previous exhibitions.