Queen Mary University of London Neuron Pod

Complete	Area	Client	Architect
2019	UK England	Queen Mary University of London	All Design

Queen Mary University's Neuron Pod is a free-standing 10m high multi-functional learning space. Made up of 13 curved steel sections welded together into a striking shape of a nerve cell, it is raised up on three tapering legs and pierced by fibre-optic filaments which light up at night. The shape naturally provides a sheltered courtyard beneath the structure.

The Neuron Pod serves as an education centre accessed from a bridge connecting to the first floor of the neighbouring, award-winning Blizard Building. The acoustic requirement of the space was for flexibility to optimise the number and type of uses and events. Excellent speech intelligibility was a priority given the space was to provide a multi-functional space for live science shows, hands-on workshops, experiments, debates, films and exhibitions.

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The project was funded by various charitable trusts (Wellcome Trust, Barts Charity, the Wolfson Foundation, Garfield Weston Foundation, Hobson Charity, Gosling Foundation and Queen Mary University of London), so the project needed clever design to remain cost-effective.

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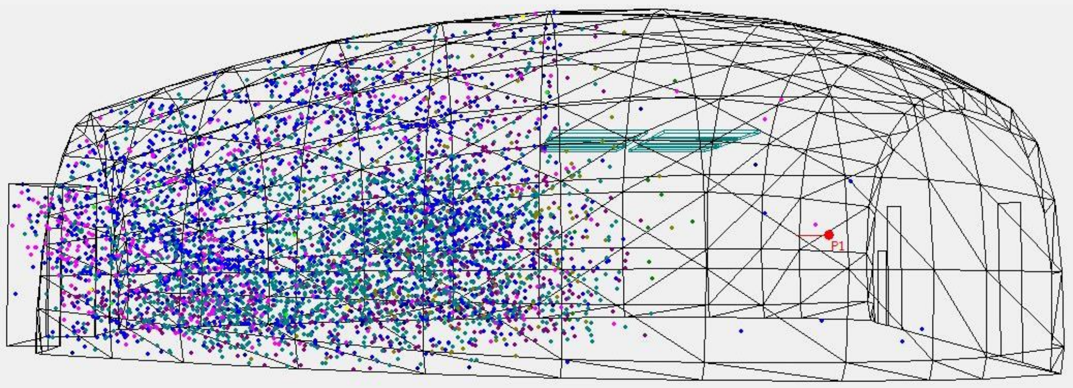
Internal Acoustics

The Neuron Pod provides an exciting internal space with an ovoid shape and concave surfaces. This proved a challenge to suitable speech intelligibility for the room's main use for lectures, including a 'piston' effect between the room's two ends. Using a 3D computer model, the acoustic effects were investigated including flutter echoes and sound focusing. Visual demonstrations of these unique effects were shown using the billiard feature in Odeon, helping the architect see why the placement of acoustic finishes was crucial. A strategy was developed to use perforated acoustic panels to the front and rear walls to control the 'piston effect'. These were developed to represent mitochondrion structures which were incorporated into the perforated panels.



Example of the mass of sound (represented as balls) travelling back and forth within the space

In addition, the interior wall finish was sculpted closed-cell foam, which had limited sound absorbing properties at the mid/high frequencies of human speech. The resulting excess reverberation would interfere with speech intelligibility. To solve this, unique sound absorbing baffles were designed in conjunction with artist Georgia Scott, made from shaped foam, covered in metal mesh and suspended from the ceiling. They are designed to mimic organelles (little organs) suspended in cytoplasm, just as they would in a typical cell structure.