The GlueX Experiment is a key element of the Jefferson Lab 12 GeV upgrade. The experiment is at the end of a new beam line from the Continuous Electron Beam Accelerator Facility (CEBAF) at Jefferson Lab, that will use 12 GeV electrons to deliver linearly-polarized photons to a new experimental area, Hall D. The primary physics goal of GlueX is to discover and study the properties of hybrid mesons–particles where the gluonic field contributes directly to the $J^{PC}$ quantum numbers of the mesons. Lattice QCD calculations indicate that several of the nonets of these hybrid mesons have exotic quantum numbers, forbidden $J^{PC}$ for a simple fermion-antifermion system. In addition, the expected masses for the lightest hybrids are well-matched to the energy and kinematics accessible to the GlueX experiment. Commissioning and engineering of the GlueX experiment started in late 2014 and continued through the spring of 2016. The first physics program will start in the fall of 2016 using so-called low-intensity beam. This program will continue through 2017, and lead up to the high-intensity running of GlueX. This program is expected to increase the beam intensity by a factor of 5, and implement a software trigger to limit the physical data being recorded. The necessary tests needed to demonstrate running at this higher intensity are part of the current low-intensity program.

In particular, this program will utilize the hermetic design of GlueX coupled with machine-learning algorithms to identify final states with strange particles. It has been shown that a number of interesting search channels can be reconstructed using the baseline GlueX detector with purities on the order of 90%. Given the statistics that can be obtained with the high-intensity running, this will make it possible to carry out several important searches for isoscalar exotic hybrid mesons. The lightest $s\bar{s}$ hybrids: $h_0'$, $\eta_1'$ and $h_2'$ are all expected to couple to $K\bar{K}\pi\pi$ final states, while the latter two are also expected to couple to $K\bar{K}\pi$ final states. In addition to these exotics, normal $s\bar{s}$ mesons are also not well known. These include the $\phi_3(1870)$ which couples to $K\bar{K}$ and the $Y(2170)$, coupling to $f_0(980)\phi$. In addition to mesons, GlueX also plans to study the spectrum of doubly-strange baryons, the $\Xi$ states. Several of the excited states will be accessible during this run period, and will open the possibilities for the first studies of their spin and parity. This high-intensity running of GlueX will open the door to the full physics program and provide important results on both mesons and baryons.