

Community input on target selection

The science community is invited to provide input to the ULLYSES STScI implementation team on target selection.

ULLYSES will define a UV spectroscopic reference sample of young (< 10 Myr) high- and low-mass stars. Up to 1,000 orbits of COS and STIS spectroscopy will be employed in targeting over ~ 150 OB stars in the Magellanic Clouds and lower metallicity galaxies in the Local Group, together with ~ 40 T Tauri stars and brown dwarfs in the Milky Way. In addition, ULLYSES will monitor 4 typical T Tauri stars (~ 25 observations each, spaced at different rotational phases through at least three rotation periods, and over months-years timescales).

The resulting library will provide template spectra of massive stars extending to the low-metallicity regime, and templates for young low mass stars to masses below $0.5 M_{\odot}$. The legacy of this large UV dataset on the first 10 Myr of stellar evolution will be enhanced by enabling exciting science in the fields of ISM, CGM, jets, and exoplanets.

The HST UV Legacy Science Definition Working Group delivered a report that outlines the science goals of ULLYSES, gives a high-level description of the observing strategy, and includes a possible list of targets. The report can be found [here](#).

Target selection

The implementation team at STScI invites the community to provide recommendations for specific targets and/or types of targets to be observed as part of the ULLYSES program. We provide links to spreadsheets that summarise the HST data available currently in the MAST archives. The targets should be aligned with the science goals outlined in the report and cover the parameter space defined therein:

- ~ 150 OB stars in the LMC and SMC that uniformly sample spectral types and luminosity class, including WR stars. Whenever possible, the sight-lines should sample a range of extinction. Overlap with the FUSE and VLT archival samples is preferable. [LMC COS archive data](#) [SMC COS archive data](#)
- ~ 5 -10 OB stars in low-metallicity galaxies ($Z < 10\%$ solar) in the Local Group that are observable with HST/COS (G140L or G130M + G160M). Availability of spectral classification and archival optical spectroscopic observations are preferable. [Sextans A COS archive data](#)
- ~ 40 -50 T Tauri stars and brown dwarfs sampling masses 0.05 - $1 M_{\odot}$ (focusing on the low mass end $< 0.5 M_{\odot}$), ages 1 - 10 Myr, log accretion rates $= -10$ to $-6 M_{\odot}/\text{yr}$, jet presence/absence, disk inclination and cloud membership (Lupus, Chamaeleon I, Upper Sco, Ori OB1, a, b OB associations, TW Hya, Eta Cha, Epsilon Cha associations). Availability of archival data (sub-mm/radio imaging and spectroscopy, optical-IR spectroscopy, X-ray, or other) is preferable. Targets should be confirmed single objects with known optical or UV reddening. [Low mass stars archive data](#)
- 4 T-Tauri stars sampling different magnetic field structures, as measured previously from Zeeman Doppler Imaging, as well as disk/star inclination and jet presence/absence. Rotation periods and UV flux for these objects should be known.

The list of Cycle 27 approved targets and observations can be found at <http://www.stsci.edu/hst/proposing/approved-programs>.

Recommendations for specific samples must be accompanied by the following:

- A justification of the relevance of the targets given the science goals of ULLYSES and the parameter space listed above, including all references from the literature for catalog and archival data (3 pages max, including figures and references). A cover page listing the authors of the document should be included.
- A table of target parameters in the form of an Excel spreadsheet following the content and format using the following templates: [Massive star template](#) [Low mass template](#)

In addition, the implementation team at STScI invites the community to provide a recommendation about whether known massive binary systems should or should not be included in the ULLYSES massive star sample (1 page max). If the scientific justification favors UV observations of known binaries, please also specify (a) what sort of phase resolution is required; (b) how many systems should be observed; and (c) what range of orbital and system parameters should be probed.

Relevant materials should be sent to ullyses@stsci.edu by September 6, 2019.

The implementation team at STScI is looking forward to the community involvement in this exciting program.

The ULLYSES implementation team at STScI