

**Onyx Pharmaceuticals Inc.**  
**Statement of Qualifications for Performing the OD<sub>260nm</sub>/SDS Assay.**

Personnel:

Analysts involved in performing the OD<sub>260nm</sub>/SDS procedure have at a minimum

- A BS in chemical engineering, chemistry and/or biological sciences (or equivalent);
- > five years of industrial (biopharmaceutical) experience; and
- 2+ years of experience with adenoviral products.

The procedure will be performed in the Analytical Development laboratory. This group has been using a spectrophotometric technique very similar to the one proposed by the Adenoviral Reference Material Working Group for the last two years; a copy of the Onyx procedure is attached.

The Director of Analytical and Formulation Development (BS and Ph.D. in Chemical Engineering, 9+ years industrial experiment in biopharmaceuticals, last 2+ years in the field of adenoviral product development) will review assay results. Onyx's Analytical Development group has done extensive work to qualify the OD<sub>260nm</sub>/SDS assay by evaluating intra- and inter-assay precision, linear range, limits of detection and quantitation, ruggedness and inter-laboratory comparability. The accuracy of the Maizel extinction coefficient has been evaluated using orthogonal techniques (e.g., DNA PicoGreen, epifluorescence). The qualified method has been successfully transferred to several internal and external laboratories, and is being used routinely for release and stability testing at Onyx, as well as for in-process testing at several contract manufacturing sites.

Equipment:

The OD<sub>260nm</sub>/SDS assay will be performed using an Agilent 8453 spectrophotometer purchased in December 2000. All installation qualification (IQ), operational qualification (OQ) and performance verification (PV) tests were successfully performed by the vendor on January 11, 2001. Subsequent OQ/PV tests are scheduled annually or after a significant repair is performed. Another fully validated (annually re-certified) UV spectrophotometer (Beckman DU® 640B) is routinely used in the Onyx QC lab and is available as a back-up for the Analytical Development instrument.

Duration of Analysis:

Approximately three days will be necessary to perform the assay and review the data once samples are received at Onyx. This allows sufficient time for retesting should that be necessary.

Readiness:

The laboratory is available to begin testing immediately (instruments are calibrated and analysts are qualified on the procedure).

Additional Characterization:

Onyx's OD<sub>260nm</sub>/SDS procedure, while very similar to the one proposed by the Adenoviral Reference Material Working Group, has several internal controls that allow one to evaluate sample purity ( $A_{260}/A_{280}$  ratio for evaluation of DNA vs Protein content,  $A_{320}$  correction to assess background scatter from non-viral particulates, etc.). These additional measurements provide information about the suitability of the Maizel extinction coefficient for a given sample. We propose reporting assay results using both methods: additional wavelength data will be collected concurrently with the OD<sub>260</sub> measurement, so no additional sample or sample preparation will be required.