

UF | ICBR Cytometry

University of Florida, Interdisciplinary Center for Biotechnology Research

<https://biotech.ufl.edu>

CTAC / ICBR SOP : Management of Animal Diet Autofluorescence

Title: Management of Animal Diet and Autofluorescence

Materials Required:

Rodents

Alfalfa-free rodent chow

Purpose:

To detail the management of potential competing fluorescence / autofluorescence in the subjects' abdomen to maintain imaging capabilities.

Background:

The majority of commercially available laboratory rodent diets are high in alfalfa content. This is a type of grass or hay, and contains chlorophyll.

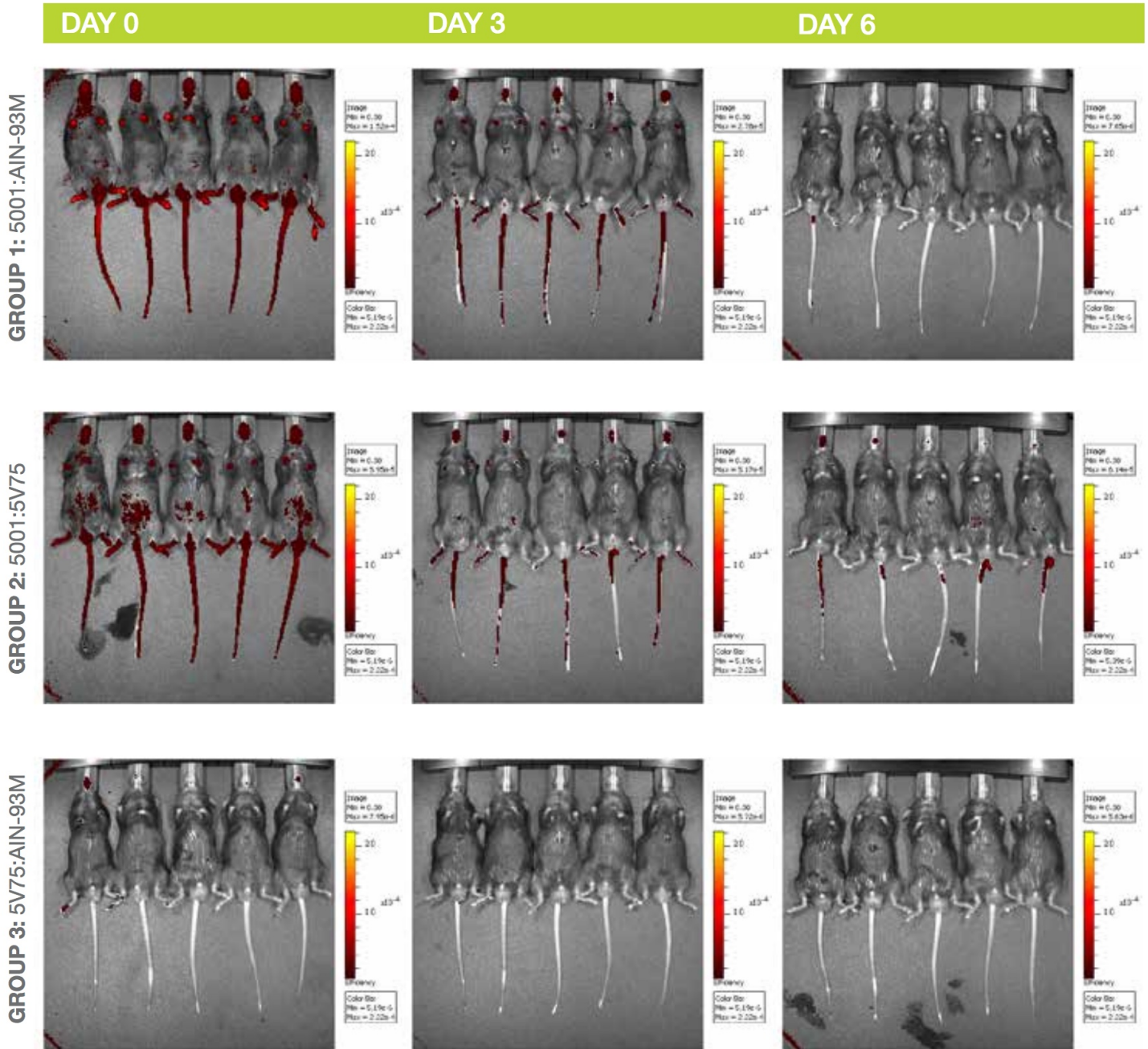
It has demonstrated in a number of studies that laboratory animal diets containing chlorophyll fluoresce at 680 nm. This can interfere with imaging many common in vivo fluorophores such as GFP or Alexafluor 650 and 680. The interfering fluorescent signal they produce as they pass through the gastrointestinal tract makes quantification of true signal difficult. Unrefined chlorophyll-containing ingredients, particularly alfalfa found in grain-based chow diets, are the causative agents for this 'noise'. Using a purified diet eliminates chlorophyll and provides the clean background in which to view your images.

Harlan-Teklad is the most common supplier of mouse or rat chow. The standard rodent chow used at the University of Florida [Animal Care Services \(http://acs.ufl.edu/\)](http://acs.ufl.edu/) is Harlan 2918, or 2919 if breeding animals.

The research completed thus far suggests that grain-based and / or purified diets are effective in reducing autofluorescence, particularly in the 600nm-800nm range. In diet vs. diet comparisons, while some seemed to clear from the gut faster than others all had near total clearing after 7 days administration.

In order to get a suitable diet for your animals prior to scanning with the IVIS Spectrum, a Special Services Request must be made with Animal Care Services to get the correct diet. This diet is Harlan 2018S (<https://www.envigo.com/products-services/teklad/laboratory-animal-diets/natural-ingredient/rodent/2018-diets.aspx>). Log on to myACS at <http://acs.ufl.edu> (<http://acs.ufl.edu>), and navigate to Forms > Special Services Request

The diet must be given to the mice / rats for 7 days before imaging to avoid autofluorescence in this area predominantly, but even at a lower level in the skin.



Levenson R.M., Lynch D.T., Kobayashi H., Backer J.M., Backer M.V., 2008. Multiplexing with Multispectral Imaging: From Mice to Microscopy. ILAR, 49; 78-88.

Kovara J.L., Simpson M.A., Schutz-Geschwender A., and Olivea D.M., 2007. A systematic approach to the development of fluorescent contrast agents for optical imaging of mouse cancer models. Analytical Biochemistry, 367 (1); 1-12.

The degree to which diet will affect the imaging of the subjects' imaging will depend on the wavelengths of interest to the user and the anatomical area of interest.