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Data Article

Raw and processed microscope images of fixed cells at baseline and following various experimental perturbations

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ABSTRACT

The data included in this article comprise raw and processed images of fixed cells at baseline and subjected to various experimental perturbations. This dataset includes images of HUVEC cells fixed and subsequently incubated at either 37 °C or room temperature, primary rat vascular smooth muscle cells exposed to 25 mM glucose, and SH-SY5Y neurons exposed to hydrogen peroxide. Raw images appear exactly as they were captured on the microscope, while processed images show the binarization provided by software used for measurements of mitochondrial morphology. For in-depth discussion of the experiments and computational methods pertaining to this data, please refer to the corresponding research article titled "Fully automated software for quantitative measurements of mitochondrial morphology" (McClatchey et al., in press) [1].

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Specifications Table

Subject area	*Biology*
More specific subject area	*Mitochondrial dynamics*
Type of data	*Images*
How data was acquired	*Microscopy and image processing*
Data format	*PNG*
Experimental factors	*HUVEC cells, primary SMCs from Wistar and GK rats, and SH-SY5Y neurons cultured for 6–8 passages in vitro.*
Experimental features	*Fixed cells stained for Tom20 (mitochondria), nitrotyrosine (cytoplasm), and DAPI (nuclei) and binarized using computational methods* [1–3]
Data source location	*Aurora, Colorado, United States of America*
Data accessibility	*Data is within this article.*

Value of the data

- Investigators considering use of this mitochondrial morphology measurement technique can refer to these images for assessment of software quality.
- Readers to whom the endpoints reported in the associated primary research article [1] are interesting can use these images as a visual reference.
- Investigators considering use of this mitochondrial morphology measurement technique can compare their images to these to assess whether this software is applicable.

1. Data

The images shown here consist of raw microscope images (left) and software-binarized images (right) acquired or generated for individual cell culture experiments in the associated primary research article [1]. The first image acquired for each treatment group is shown; please refer to the Supplementary materials for the full set of raw microscope images. The information included above (i.e. specifications table, value of the data, data description in this paragraph) applies to all image sets below. Experimental design, materials and methods are included in both general and experiment-specific terms.

2. Experimental design, materials and methods

2.1. Reagents

Dulbecco's Modified Eagles Medium (DMEM) 5 mM and 25 mM glucose and non-essential amino acids and Laughlin's F12 Medium were obtained from Thermo Scientific Hyclone, and trypsin and trypsin inhibitor were purchased from Fisher Scientific. Fetal bovine serum (FBS) was procured from Gemini Bioproducts. Hank's Balanced Salt Solution (HBSS) was purchased from Corning Life Sciences. Secondary detection antibodies Alex Fluor 488 and 546 were purchased from Life Technologies. Antibodies to TOM20 (rabbit) and nitrotyrosine (mouse) were procured from Santa Cruz Biotechnology.

2.2. Cell culture

Primary rat vascular smooth muscle cells (SMCs) were cultured in low glucose (5 mM) DMEM with 10% fetal bovine serum (FBS), 1% L-glutamine, 1% non-essential amino acid blend, and 1% Pen/Strep,