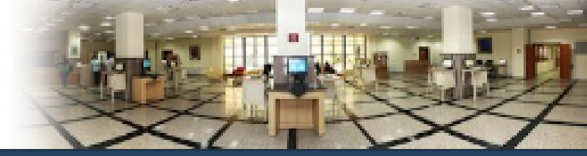
JOVE Biology

KAPSAM

- JOVE (Journal of Visualized Experiments) dünyanın ilk bilimsel video veri tabanıdır.
- JoVE Biology, hücresel, moleküler ve organizmal biyoloji alanlarında teknik ve deneysel yaklaşımları içerir.
- İçeriğinde 1.920 adet video makale bulunmaktadır.

Gazi Üniversitesi Merkez Kütüphanesi



Ana Sayfa | Kütüphane Hakkında | Kullanım Koşulları | Çalışma Saatleri | Personel

Katalog Tarama | Gazi Search

Anahtar Kelime | Aranacak sözcük | Ara

Elektronik Kaynaklar

- E-Kaynaklar Kullanım Kuralları
- Elektronik Dergiler
- Elektronik Kitaplar
- Elektronik Makale
- Elektronik Tezler
- Veri Tabanları
- Web of Science
- SciVal
- ENDNOTE
- iThenticate (İntihal Engelleme Programı)
- Turnitin (Tez İntihal Engelleme Programı)
- Deneme Veri Tabanları
- Gazi Üniversitesi E-Dergileri
- Elektronik Rezerv
- Diğer E-Kaynaklar

Hizmetler

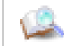
Veri tabanları bağlantısına tıklayınız.

- Görme Engelliler Bölümü
- Görsel İşitsel Materyaller
- Kareller
- Fotokopi ve Çıktı Alma
- Sessiz Çalışma Alanları
- Sıkça Sorulan Sorular
- Kütüphaneler ve Bilgi Merkezleri

Formlar

- Kullanıcı Eğitimi İstek Formu
- Yayın Sipariş Formu
- Kütüphanelerarası İşbirliği Formları
- Veri Tabanları Değerlendirme Formu
- Deneme Veri Tabanları Değerlendirme Formu

Duyurular

 Kampüs Dışı Erişim (Proxy Ayarları)

Kullanıcı İşlemleri

Sanal Kütüphane Turu

Açık Erişim

Gazi Üniversitesi Kütüphane ve Dokümantasyon Daire Başkanlığı

06500 Teknikokullar ANKARA

Tel: 0 (312) 2022901 - Fax: 0 (312) 2022938

iThenticate (İntihal Engelleme Programı)

Sisteme giriş yapabilmeniz için erişim [...] aları için lütfen inceleyiniz.

NOT: Programın tezlerin i[...]tihal tespit[...]

Veri tabanı ismine tıklayınız.

JCR (Journal Citation Reports)

JOVE Biology

JOVE Genetics

JOVE Neuroscience

JSTOR

Karger E-Journals

Kazancı Elektronik Hukuk Yayımcılığı

Library, Information Science & Technology Abstracts (EBSCO)

MasterFILE Complete

MathSciNet

Veri tabanı ana sayfası

jove

Advanced

LOG IN

ABOUT JoVE FOR LIBRARIANS PUBLISH VIDEO JOURNAL SCIENCE EDUCATION

JoVE JOURNAL

BIOLOGY

JoVE Biology includes techniques and experimental approaches in the fields of cellular, molecular, and organismal biology.

MOST RECENT ADDITIONS

Search Biology

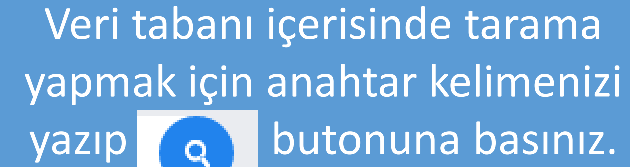
1 2 3 4 5 6 7 8 9 ... 80 ›

1,920 VIDEO ARTICLES

Investigating Teliospore Germination Using Microrespiration Analysis and Microdissection

Lauren A. Ostrowski*[1], Amanda M. Seto*[1], Barry Saville[1,2]

[1]Environmental and Life Sciences Graduate Department, **Trent University**, [2]Forensic Science Departme

Veri tabanı içerisinde tarama yapmak için anahtar kelimenizi yazıp  butonuna basınız.

BIOLOGY

Micromanipulation Techniques Allowing Analysis of Morphogenetic Dynamics and Turnover of Cytoskeletal Regulators

Georgi Dimchev[1,2], Klemens Rottner[1,2]

[1]Division of Molecular Cell Biology, Zoological Institute, **Technische Universität Braunschweig**, [2]Department of Cell Biology, **Helmholtz Centre for Infection Research**

jove

Search 8,651 video articles   Advanced

LOG IN

ABOUT JoVE | FOR LIBRARIANS | PUBLISH | VIDEO JOURNAL | SCIENCE EDUCATION

JoVE JOURNAL

BIOLOGY

JoVE Biology includes techniques and experimental approaches in the fields of cellular, molecular, and organismal biology.

MOST RECENT ADDITIONS

Neurotoxicity in the Intact Piglet Brain

Video makaleyi görüntülemek için tıklayınız.

3 4 5 6 7 8 9 ... 30 ›

709 VIDEO ARTICLES

A Neuronal and Astrocyte Co-C... Analysis of Neurotoxicity

J...net L Anderl[1], S...

[1]B...cience Division, High Content Analysis Research and Development, **Millipore Inc**

Tarama sonuç sayfası

BIOLOGY

Isolation and Functional Analysis of Mitochondria from Cultured Cells and Mouse Tissue

Thomas Lampl[1], Jo A. Crum[1], Taylor A. Davis[1], Carol Milligan[2,3,4], Victoria Del Gaizo Moore[1]

[1]Chemistry Department, **Elon University**, [2]Department of Neurobiology and Anatomy, **Wake Forest School of Medicine**, [3]Neuroscience Graduate Program, **Wake Forest School of Medicine**, [4]ALS Center Translational Science Unit, **Wake Forest School of Medicine**

Video makale

ABOUT JoVE | FOR LIBRARIANS | PUBLISH | VIDEO JOURNAL | SCIENCE EDUCATION

FREE ACCESS TO THIS ARTICLE IS SPONSORED BY:

Sponsorship Disclaimer

CHAPTERS

0:05	Title
0:48	Introduction
1:28	Cell Preparation for Neurotoxicity Screens
2:57	Cell Fixation and Immunofluorescent Staining
6:07	HCS Imaging, Analysis, and Results
14:15	Conclusion

ISSUE 27
DOI: 10.3791/1173
PUBLISHED: 5/05/2009
9 COMMENTS

PDF | EMBED | ADD TO FAVORITES

Sayfayı aşağı kaydırdığımızda video sağ tarafta görüntülenmeye devam ederken, makalede yer alan tüm bilgiler ve görseller sayfa boyunca devam etmektedir.

jove

LOG IN

PUBLISH | VIDEO JOURNAL | SCIENCE EDUCATION

ABSTRACT | PROTOCOL | DISCUSSION | MATERIALS | REFERENCES | DOWNLOADS

CITE THIS ARTICLE

Copy Citation | Download Citations

Anderl, J. L., Redpath, S., Ball, A. J. A Neuro … . Exp. (27), e1173, doi:10.3791/1173 (2009).

TRANSLATE TEXT TO:

Choose Language...

ABSTRACT

High Content Analysis (HCA) assays combine cells and detection reagents with automated imaging and po… measurement of multiple cellular phenotypes within a single assay. In this study, we utilized HCA to develop… assessment represents an important part of drug safety evaluation, as well as being a significant focus of e… neurotoxicity is also a well-accepted *in vitro* marker of the development of neurodegenerative diseases such…

PROTOCOL

Cell Preparation:

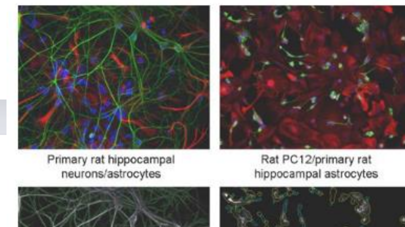
1. Prior to cell seeding for assay, culture neurons/astrocytes in growth media until ~70-80% confluent (unless cell seeding directly from thaw or isolation).
2. Detach cells from culture flasks/plates via method appropriate for cell type of interest. If necessary, coat assay plate wells with poly-D-lysine or extracellular matrix protein to enhance cell adhesion. Co-cultures of astrocytes and neurons may be seeded simultaneously or sequentially. For sequential seedings, plating of astrocytes first as a "basal" layer is recommended, followed by neuronal plating and differentiation, if necessary. Adjust cell density as appropriate for cell type, subsequent culture time, parameters of interest, etc. Depending on culture age, cell source and seeding density, primary cultures may vary greatly in rate of proliferation, GFAP expression or neurite outgrowth - it is important to characterize and optimize your cell system to provide the most biological relevance for your experimental model, as well as to provide for effective imaging segmentation and analysis using … described in Step 3 below), allow … period, incubate cells in growth m… PC12 cells), as appropriate. Conti… for cell type.
3. Cell treatments (control compoun… of treatment of interest. Acrylamid… for duplicate 12-point dose respo… compounds are provided at 250X … peroxide, assuming maximum trea… dilution of the 250X compound in … be serially diluted directly in sterile… already present in each well, for a… treatment at 37°C prior to fixation.

HCS222 Image Analysis Guidelines

Cell Parameter	Detection	Segmentation/ Measurement	Rationale
Cell Number, Nuclear Characteristics	Hoechst HCS Nuclear Stain	Nuclear region (460 nm emission channel). Count number of nuclei. DNA content (nuclear intensity) or nuclear area analyses are also possible.	Use cell number, nuclear characteristics to determine cell loss, toxicity phenotypes, etc. Can "filter" nuclei for those associated with βIII-tubulin or GFAP expression to obtain separate neuronal and astrocytic cell counts/characterizations (strongly recommended).
βIII-Tubulin Expression, Neurite Outgrowth	HCS Secondary Antibody, FITC-conjugated	Cytoplasmic region (535 nm emission channel). FITC signal may be used to distinguish neuronal cell bodies from neurites (e.g., via minimum/average cell body areas, minimum/maximum neurite lengths and widths). Determine parameters such as total neurite length, neurite counts/cell, etc.	Neurite outgrowth measurements may be modulated during neuronal differentiation or as a result of chemical injury, disease states, etc. Can "filter" cell bodies for those associated with βIII-tubulin expression to obtain distinct neuronal characterization (strongly recommended).
GFAP Expression, Astrocyte Area	HCS Secondary Antibody, Cy3-conjugated	Cytoplasmic region (600 nm emission channel). Cy3 signal may be used to define astroc… segmentation. Determine parameters such as average cytoplasmic signal intensity, cell a…	

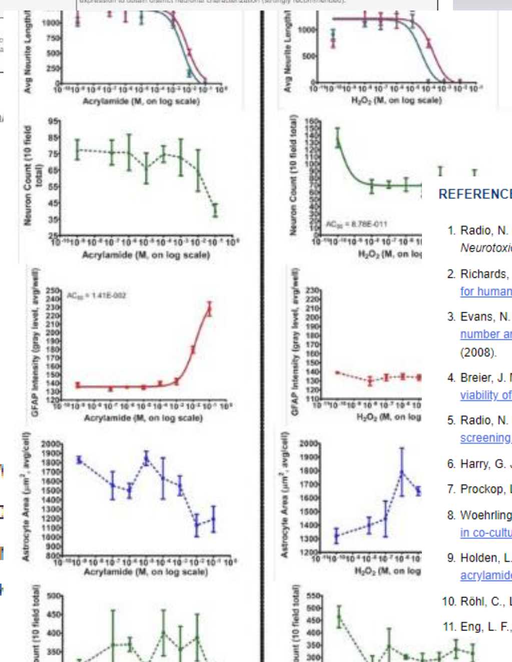
Table 1. Image Acquisition and Analysis Guidelines – HCS222 βIII-Tubulin…

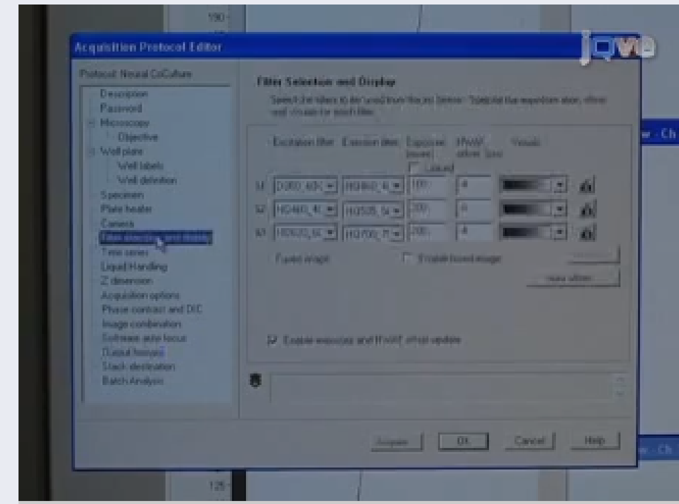
Representative Results:



Primary rat hippocampal neurons/astrocytes

Rat PC12/primary rat hippocampal astrocytes





REFERENCES

1. Radio, N. M., Mundy, W. R. Developmental neurotoxicity testing in vitro: models for assessing chemical effects on neurite outgrowth. *Neurotoxicology.* **29**, 361-376 (2008).
2. Richards, G. R., Smith, A. J., Parry, F., Platts, A., Chan, G. K., Leveridge, M., Kerby, J. E., Simpson, P. B. A morphology- and kinetics-based cascade for human neural cell high content screening. *Assay Drug Dev Technol.* **4**, 143-152 (2006).
3. Evans, N. A., Facci, L., Owen, D. E., Soden, P. E., Burbidge, S. A., Prinjha, R. K., Richardson, J. C., Skaper, S. D. Abeta(1-42) reduces synapse number and inhibits neurite outgrowth in primary cortical and hippocampal neurons: A quantitative analysis. *J Neurosci Methods.* **175**, 96-103 (2008).
4. Breier, J. M., Radio, N. M., Mundy, W. R., Shafer, T. J. Development of a high-throughput screening assay for chemical effects on proliferation and viability of immortalized human neural progenitor cells. *Toxicol Sci.* **105**, 119-133 (2008).
5. Radio, N. M., Breier, J. M., Shafer, T. J., Mundy, W. R. Assessment of chemical effects on neurite outgrowth in PC12 cells using high content screening. *Toxicol Sci.* **105**, 106-118 (2008).
6. Harry, G. J., Tiffany-Castiglioni, E. Evaluation of neurotoxic potential by use of in vitro systems. *Expert Opin Drug Metab Toxicol.* **1**, 701-713 (2005).
7. Prockop, L. D. The allegory of a mountain: an environmental introduction to neurotoxicology. *J Neurol Sci.* **262**, 7-14 (2007).
8. Woehrling, E. K., Hill, E. J., Coleman, M. D. Development of a neurotoxicity test-system, using human post-mitotic, astrocytic and neuronal cell lines in co-culture. *Toxicol In Vitro.* **21**, 1241-1246 (2007).
9. Holden, L. J., Coleman, M. D. Assessment of the astrogliotic responses of three human astrocytoma cell lines to ethanol, trimethyltin chloride and acrylamide. *Toxicology.* **241**, 75-83 (2007).
10. Röhl, C., Lucius, R., Sievers, J. The effect of activated microglia on astrogliosis parameters in astrocyte cultures. *Brain Res.* **1129**, 43-52 (2007).
11. Eng, L. F., Ghirnikar, R. S., Lee, Y. L. Glial fibrillary acidic protein: GFAP-thirty-one years (1969-2000). *Neurochem Res.* **25**, 1439-1451 (2000).

Güvenli | https://www.jove.com/video/1173/a-neuronal-astrocyte-co-culture-assay-for-high-content-analysis

Uygulamalar İŞ SEM Kütüphane Google Google Çeviri Google Akademik Zimbra Eduroam - Educatio Giriş | Gazi İYS Proxmox GÜ Merkez Kütüpha Hotmail

jove

Search 8,651 video articles Advanced LOG IN

ABOUT JoVE FOR LIBRARIANS PUBLISH VIDEO JOURNAL SCIENCE EDUCATION

ABSTRACT PROTOCOL DISCUSSION MATERIALS REFERENCES DOWNLOADS

CITATIONS
XML
PDF
MATERIALS LIST

CITE

Copy

Ander... ...nt Analysis of
Neuro...

Sayfanın sağ üst kısmında yer alan
DOWNLOADS sekmesi ile herhangi bir Referans Yönetim Aracı'na eklemek üzere bilbliyografik künyeyi

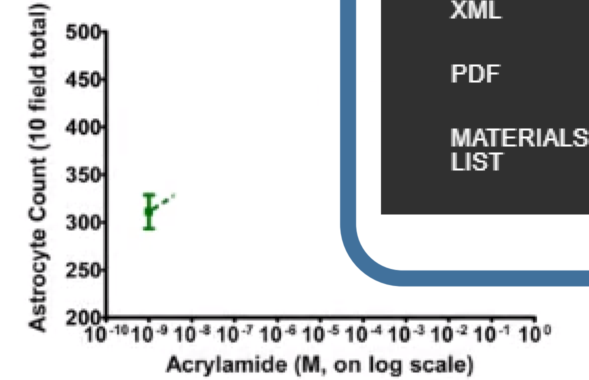
- **Citations:** Ris formatında ya da
- **XML:** Xml formatında;

Makalede kullanılan materyal listesini

- **Materials List:** Pdf formatında,

Makalenin tam metnini de

- **PDF:** Pdf formatında bilgisayarınıza indirebilirsiniz.



TRA...
Choos...

CITE THIS

CHAPTERS

0:05 Title

ABSTRACT

50 µl HCS 2° Ab/Hoechst buffer

06:59

05:29

ISSUE 27
DOI: 10.3791/1173
PUBLISHED: 5/05/2009
9 COMMENTS

PDF

Ayrıca videonun altında yer alan PDF butonuna tıklayarak da makaleyi pdf formatında görüntüleyebilirsiniz.

jove-protocol-1173-a-neuronal-astrocyte-co-culture-assay-for-high-content-analysis 1 / 5

jove Journal of Visualized Experiments www.jove.com

Video Article

A Neuronal and Astrocyte Co-Culture Assay for High Content Analysis of Neurotoxicity

Janet L Anderl[1], Stella Redpath[1], Andrew J Ball[1]

[1]Bioscience Division, High Content Analysis Research and Development, Millipore Inc

Correspondence to: Andrew J Ball at Andrew_ball@millipore.com

URL: https://www.jove.com/video/1173
DOI: doi:10.3791/1173

Keywords: Neuroscience, Issue 27, high content screening, high content analysis, neurotoxicity, toxicity, drug discovery, neurite outgrowth, astrocytes, neurons, co-culture, immunofluorescence

Date Published: 5/5/2009

Citation: Anderl, J.L., Redpath, S., Ball, A.J. A Neuronal and Astrocyte Co-Culture Assay for High Content Analysis of Neurotoxicity. *J. Vis. Exp.* (27), e1173, doi:10.3791/1173 (2009).

Abstract

High Content Analysis (HCA) assays combine cells and detection reagents with automated imaging and powerful image analysis algorithms, allowing measurement of multiple cellular phenotypes within a single assay. In this study, we utilized HCA to develop a novel assay for neurotoxicity. Neurotoxicity assessment represents an important part of drug safety evaluation, as well as being a significant focus of environmental protection efforts. Additionally, neurotoxicity is also a well-accepted *in vitro* marker of the development of neurodegenerative diseases such as Alzheimer's and Parkinson's diseases. Recently, the application of HCA to neuronal screening has been reported. By labeling neuronal cells with βIII-tubulin, HCA assays can provide high-throughput, non-subjective, quantitative measurements of parameters such as neuronal number, neurite count and neurite length, all of which can indicate neurotoxic effects. However, the role of astrocytes remains unexplored in these models. Astrocytes have an integral role in the maintenance of central nervous system (CNS) homeostasis, and are associated with both neuroprotection and neurodegradation when they are activated in response to toxic substances or disease states. GFAP is an intermediate filament protein expressed predominantly in the astrocytes of the CNS. Astrocytic activation (gliosis) leads to the upregulation of GFAP, commonly accompanied by astrocyte proliferation and hypertrophy. This process of reactive gliosis has been proposed as an early marker of damage to the nervous system. The traditional method for GFAP quantitation is by immunoassay. This approach is limited by an inability to provide information on cellular localization, morphology and cell number. We determined that HCA could be used to overcome these limitations and to simultaneously measure multiple features associated with gliosis - changes in GFAP expression, astrocyte hypertrophy, and astrocyte proliferation - within a single assay. In co-culture studies,

Teşekkürler…