The NIDDK Information Network (dkNET) - A Community Research Resource, Information, and Data Discovery Portal

Jeffrey S. Grethe, Ph.D.
September 8, 2016
bioCADDIE Webinar
Community Data and Information Resources

• Over 3500 resources have been identified
  – Researchers can’t visit them all
  – Most content from these resources not easily found through standard search engines
  – Even more structured content on the web

• Resources provide domain specific views of data
  – Must provide a snapshot of information in a simple to understand form that can be further explored in the native database
  – Must provide a biomedical science based semantic framework for resource description and search
Building a Community Resource, Information, and Data Index

• It is quite difficult to access, collate, and filter the incredible array of information and data in the public domain.

• dkNET was established in recognition of the need to interconnect research communities, both basic and clinical, by providing seamless access to large pools of resources, information, and data relevant to the mission of the Neuroscience Blueprint.

• dkNET provides a single point-of-entry for discovering this information to allow researchers to make good decisions in the research process, thereby increasing both the speed and efficiency of the process.
The FAIR Principles and dkNET

The FAIR Guiding Principles for scientific data management and stewardship

Mark D. Wilkinson, Michel Dumontier, Ir-brand Jan Aalbersberg, Gabrielle Appleton, Myles Axton, Ana Bank, Niklas Blomberg, Jan-Willem Boten, Luiz Bonno da Silva Santos, Philip E Bourne, Sidaou Bouman, Anthony J Brookes, Tim Clark, Mercé Crosas, Ingrid Dillo, Olivier Dumon, Scott Edmunds, Chris T Evelo, Richard Finkema, Alejandra Gonzalez-Beltran, Alasdair J G Gray, Paul Groth, Carole Goble, Jeffrey S. Grethe, Jaap Hermsma, Peter A.C. ’t Hoen, Rob Hooff, Tobias Kuhn, Ruben Kok, Joost Kok, Scott J. Lusher, Maryann E. Mantone, Albert Mons, Abel L. Packer, Bengt Persson, Philippe Rocca-Serra, Marco Rocc, Rene van Schaik, Susanne-Annata Sansone, Erik Schulte, Thierry Sengstag, Ted Slater, George Shaw, Monis A. Swertz, Mark Thompson, Johan van der Lei, Erik van Mulligen, Jan Velterop, Anika Waagmeester, Peter Wittenburg, Katherine Wolterscroft, Jun Zhao, and Barend Mons

Findable: A core aspect of dkNET’s mission - facilitate access to a collection of diverse research resources

Accessible: Assist users by directing them to available resources

Interoperable: Provide unified views of certain data and information across resources

Reusable: Supports community standards and develops standard representations for resources

Attribution and Recognition: Leading initiative to unambiguously cite resources via Research Resource Identifiers

http://www.nature.com/sdata/
dkNET: A “Resource” Discovery Index

NIDDK Information Network

DISCOVER NEW

Enter search term

Your Help is Needed with dkNET Survey
Your opinions and suggestions are very important to us in helping dkNET to develop better tools for scientific community. Please feel free to give us feedback by filling in our online survey. Thank you!

Community News

daKNET Workshop/Webinar on June 17, 2016

daKNET Workshop/Webinar on June 17, 2016

We invite you to attend dkNET workshop/webinar to discover and learn how dkNET can help you with your research and keep you up to date with the community on Friday, June 17, 2016, 8:30 AM- 10:00 AM

Tweets by @dkNET_info

daKNET @dkNET_info
The Jackson Laboratory's TIDR webinar on June 16, 2016: Essential Tips for Modeling Diet-Induced Obesity in Mice goo.gl/9R16Z8
dkNET Offers…

- A search portal to find community-vetted research resources: materials, data and tools for your research
- Access to hundreds of databases across biomedicine with one easy search
- Personalized search and display of results
- Information hub for community news and social networking
- Support for resource providers
dkNET is built on the SciCrunch platform

- Pull from and push to a common pool of data
- Customize according to communities
- Common interface elements across platforms
Community Specific Views

Drug Design Data Resource

Resource Identification Initiative

Open Data Commons For Spinal Cord Injury

University of California San Francisco

National Institute of Diabetes and Digestive and Kidney Diseases

Neuroscience Information Framework

NIH Blueprint for Neuroscience Research

NIH

NIH

NIH

NIH

NIH

National Institute on Drug Abuse

NIH

NIH

National Institute of General Medical Sciences

NIH

NIH

NIH

NIH

A COMMUNITY POWERED BY SciCrunch

Shared Infrastructure…

Shared Costs…
Shared Infrastructure: dkNET and SciCrunch

- **Community “Apps”:** Portal features driven by individual communities can be re-used by other communities

- **Community Resource Curation:** All communities have access to shared data platform

Can utilize portal infrastructure for challenges being developed by another SciCrunch project
Specialized Portals

RRIDs: a single portal for authors

- >25 authoritative databases
- One search interface
- Simple directions
- Prominent “Cite This” button
Overview of the dkNET Portal
dkNET’s Three Primary Resource Views

Community: Specialized NIDDK-relevant resources

More resources: 200+ database and information resources across biomedicine

Literature

Results are returned in specific tabs. Community resources are presented first if they are available. But all searches can be executed across all resources.
Community resources

NIDDK-funded resources and centers

- NURSA
- BCBC
- DiaComp
- GUDMAP
- T1DB
- MMPC
- NIDDK Central Repository
- dkNET Community Funding

Additional relevant databases via SciCrunch

- AddGene: Plasmids
- Clinical [trials.gov]: Clinical trials and data
- Antibody Registry: 2M+ antibodies
- Integrated animals: Model organism databases
- SciCrunch Resource Registry: 13K+ tools
- Grants.gov
dkNET connects resources

Research resource analytics

RRID’s

Community

More resources

Literature

Other SciCrunch communities

Social media
Each index is organized slightly differently

- **Community**
  - Functions and filters
  - Results display
  - Collections and Analytics
  - Resource categories
  - Sources

- **More resources**
  - Functions and filters
  - Results display
  - Individual records
  - System level
  - Data and/or resource type
  - Source

- **Literature**
  - Functions and filters
  - Results display
  - Analytics
  - Facets
  - Articles

Navigation differs across indices
Structure of dkNET Resources

- 3 main sections
  - Community resources
  - More resources
  - Literature

- Faceted search to drill down into a single source

- Deep search into information and data resources
NIDDK Information Network

DISCOVER NEW THINGS ...

Enter search term

- Any
- Materials
- Funding
- Protocols
- Data
- Organisms
- Resource Registry
- Software
- Database

Your Help is Needed with dkNET Survey

Your opinions and suggestions are very important to us in helping dkNET to develop better tools for scientific community. Please feel free to give us feedback by filling in our online survey.

Thank you!

Community News

- dkNET presentation at bioCADDIE webinar on Sep. 8th, 2016
- New data view - Diabetic Complications Consortium: Histology added to dkNET on Aug. 24, 2016
- NIDDK Announces New Funding Opportunities: the NIDDK Kidney Precision Medicine Project (KPMP) on Aug. 17, 2016
- Updated view for Cellosaurus on Aug. 4, 2016
- BD2K Funding Opportunities Announcements in August, 2016
- NIH BD2K and Data Science Events Announcements in August, 2016

NIDDK Announces New Funding Opportunities: the NIDDK Kidney Precision Medicine Project (KPMP) on Aug. 17, 2016

NIDDK announces new funding opportunities: the NIDDK Kidney Precision Medicine Project (KPMP). The KPMP aims to ethically obtain and evaluate human kidney biopsies from participants with Acute Kidney Injury or Chronic Kidney Disease, create a kidney tissue atlas, define disease subgroups, and identify critical cells, pathways, and targets for novel therapies. Letter of Intent due date will be on November 6, 2016. Check out the information of funding opportunities and attend the information webinars in September, 2016.

Read more

Tweets by @dkNET_info

- dkNET @dkNET_info
  Postdoc/PhD or MD student/endocrine fellow: don't miss Endocrine Society early career forum travel award application! goo.gl/UVS3YQ
- @dkNET_Retweeted
  NURSA @NURSA_tweets
  New dataset: Comparative timecourse analysis of the diabetic hepatic transcriptome in normal & high fat diets dx.doi.org/10.1621/zoo Nr...
Viewing Community Resources

NIDDK Information Network

ABOUT COMMUNITY RESOURCES MORE RESOURCES LITERATURE

Any

OPTIONS
Category Graph
Log In For Collection Options
Filter By Last Modified Time

CURRENT FACETS AND FILTERS
Description: Ascending

CATEGORIES
Materials (2,503,034)
Funding (289,573)
Protocols (404)
Data (82,628)
Organisms (499,651)
Resources (14,261)

SOURCES
Antibody Registry: Antibodies (2,479,944)
Nuclear Receptor Signaling Atlas: Antibodies (47)

ON PAGE 1 SHOWING 28 OUT OF 3,369,751 RESULTS FROM 24 SOURCES

Chicken Anti-CD34 (CD34, human hematopoietic stem cell antigen) Polyclonal Antibody, Unconjugated

http://antibodyregistry.org/AB_10058380

The GenWay Biotech Inc. Chicken Anti-CD34 (CD34, human hematopoietic stem cell antigen) Polyclonal Antibody, Unconjugated Catalog number 15-288-10811F (manufacturer recommendations: IgY; IgY Western Blot; Western Blot human) is described by the Antibody Registry.

Materials: Antibodies

BL1871

http://www.nurows.org/$[moreinfo_url]

Antibody raised in Rabbit that can be used for Western Blot, Immunoprecipitation, Immunohistochemistry, Immunofluorescence.

Materials: Antibodies

Alpha cells Mouse Monoclonal antibody

http://www.betacell.org/resource/view/resource_id/$[ab_id]

A Monoclonal antibody raised in Mouse against the peptide (NCBI Gene ID: )

Materials: Antibodies
Viewing More Resources

NIDDK Information Network

More Resources

SHOWING 812,045,414 RESULTS ACROSS 241 DATA SOURCE(S)

1. **Nuclear Receptor Signaling Atlas: Datasets (417)**
   - Nuclear Receptor Signaling Atlas
   - *NURSA Datasets* contains data related to nuclear receptors and nuclear receptor coregulators.
   - Dataset - 100.00% (417 results)

2. **MMPC: Protocols (212)**
   - MMPC
   - *National Mouse Metabolic Phenotyping Centers* provides the protocols used by MMPC for mouse models of diabetes.
   - Protocols - 100.00% (212 results)

3. **GUDMAP: Expression (51,837)**
   - GUDMAP
   - *GUDMAP, GenitoUrinary Molecular Anatomy Project* aggregates and provides experimental gene expression data from the genito-urinary system.
   - Images - 100.00% (51,837 results)
Viewing the Literature

Chapman AB  Kidney Int.  2003 Sep 12
BACKGROUND: Autosomal-dominant polycystic kidney disease (ADPKD) is characterized by gradual renal enlargement and cyst growth prior to loss of renal function. Standard radiographic imaging has not provided the resolution and accuracy necessary to detect early changes in renal volume or to reliably measure renal cyst volumes. The Consortium for Radiologic Imaging Studies in Polycystic Kidney Disease (CRISP) is longitudinally observing ADPKD individuals using high-resolution magnetic res ...[more]

PMID:12991554

Kidney Stones And Kidney Function Loss: A Cohort Study.
Alexander RT  BMJ. 2012 Aug 31
OBJECTIVE: To investigate whether the presence of kidney stones increase the risk of end stage renal disease (ESRD) or other adverse renal outcomes. DESIGN: A registry cohort study using validated algorithms based on claims and facility utilisation data. Median follow-up of 11 years. SETTING: Alberta, Canada, between 1997 and 2009. PARTICIPANTS: 3,089,194 adult patients without ESRD at baseline or a history of pyelonephritis. Of these, 1,954,836 had outpatient serum creatinine measures ...[more]

PMID:22936784

Noninvasive And Direct Measures Of Kidney Size In Kidney Donors.
Hwang HS  Am. J. Kidney Dis.  2011 Aug 26
Community Resource
Curation and Maintenance

We have assembled a list of community-based funding opportunities available via various NIDDK-supported centers, e.g., pilot projects, training opportunities. To view this list in a table, please check out dkNET Pilot Funding News: List. For a list of funding opportunities available from US government agencies, please search our Funding Opportunities database.

DiaComp Pilot And Feasibility Program
Start: 12:00am January 1, 2016
End: 12:00am June 10, 2016

This program solicits and funds small Pilot and Feasibility (P&F) projects in high impact areas of complications research. Specifically, this program aims to support discovery (hypothesis generating) and innovative (high risk/ high reward) research that is increasingly difficult to support through standard NIH mechanisms. Basic, translational and clinical research proposals are encouraged. Research involving human subjects is limited to observational studies with non-invasive or minimally invasive testing and must have IRB approval that includes the collection and use of human samples for research purposes. Interventional clinical trials are beyond the scope of this program. Awards are expected to prepare the applicant(s) to submit a future Investigator Initiated project (e.g., NIH R01). Lower priority will be given to applicants who have received DiaComp support in the past three years.

Program: DiaComp
Award Amount: $100,000
Duration: 1 Year

ReBuilding A Kidney (RBK) Partnership Project Program

dkNET Pilot Funding News: List
NIDDK Information Network (dkNET) curated a list of community-based funding opportunities provided by projects or organizations other than government granting agencies (such as NIH or NSF), e.g., pilot projects, training opportunities.
(last updated: May 25, 2016)

<table>
<thead>
<tr>
<th>Title</th>
<th>Agency</th>
<th>Description</th>
<th>Award Amount</th>
<th>Posted Date</th>
<th>Close Date</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMPC MICROMouse Program</td>
<td>MMPC</td>
<td>MICROMouse will fund high impact technology-, physiology-, or biology-based projects conceived through interaction with, or between MMPCs. Proposal objectives should take clear advantage of c ...[more]</td>
<td>$75,000</td>
<td>2015-09-01</td>
<td>2016-12-31</td>
<td>1 year</td>
</tr>
<tr>
<td>The University of Arizona Southwest Environmental Health Sciences Center Pilot Projects</td>
<td></td>
<td>CURATOR’S NOTE: This application has a rolling deadline. The start date and end date below are meant to suggest that applications can be submitted at any time. Visit the website for further i ...[more]</td>
<td>$500 - $80,000</td>
<td>2015-08-10</td>
<td>2016-06-10</td>
<td>No time frame specified</td>
</tr>
</tbody>
</table>

Pilot and Feasibility Program Database
The Beta Cell Biology Consortium (BCBC) was a team science initiative that was established by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). It was initially funded in 2001 (RFA DK-01-014), and competitively continued both in 2005 (RFAs DK-01-17, DK-01-18) and in 2009 (RFA DK-09-011). Funding for the BCBC came to an end on August 1, 2015, and with it so did our ability to maintain active websites.

One of the many goals of the BCBC was to develop and maintain databases of useful research resources. A total of 813 different scientific resources were generated and submitted by BCBC investigators over the 14 years it existed. Information pertaining to 495 selected resources, judged to be the most scientifically-useful, has been converted into a static catalog, as shown below. In addition, the metadata for these 495 resources have been transferred to ckNET in the form of RDF descriptors, and all genomics data have been deposited to either ArrayExpress or GEO.

Please direct any inquiries to the BCBC Data Management Officer (DEM).

### BCBC: Cell Line

The BCBC Cell Line Collection is a repository of mouse embryonic stem cell lines for the study of diabetes. As of August 1, 2015, BCBC is no longer in service.

(last updated: May 10, 2016)

<table>
<thead>
<tr>
<th>Cell Line Name</th>
<th>Parental Cell Line</th>
<th>Targeted Gene</th>
<th>Gene Name</th>
<th>Targeted Allele</th>
<th>Genetic Alteration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosa26-228.6XNotch.TA.Cerulean</td>
<td>TL-1</td>
<td>Gt(Rosa26Sor)</td>
<td>gene trap Rosa26, Philippe Soriano</td>
<td>Rosa26tm1(LCA)</td>
<td>RMCE</td>
<td>The binding site for Rbpj, the transcriptional mediator of Notch signaling was inserted into the Rosa26 locus replacing nucleotides -60 to -228. The complete insert contains the Rbpj cis element.</td>
</tr>
<tr>
<td>Rosa26R26-60.6XNotch-TA.Cerulean</td>
<td>TL-1 / Rosa26(LCA) clone 5B9</td>
<td>Gt(Rosa26Sor)</td>
<td>gene trap Rosa26, Philippe Soriano</td>
<td>Rosa26tm1(LCA)</td>
<td>RMCE</td>
<td>The binding site for Rbpj, the transcriptional mediator of Notch signaling was inserted into the Rosa26 locus replacing nucleotides -60 to -228. The complete insert contains the Rbpj cis element.</td>
</tr>
<tr>
<td>Rosa26tm1(CcnD1)</td>
<td>TL-1</td>
<td>Gt(Rosa26Sor)</td>
<td>gene trap Rosa26, Philippe Soriano</td>
<td>Rosa26tm1(LCA)</td>
<td>RMCE</td>
<td>ES cells express mutant cyclin D1- T286A and a chenry reporter under the regulation of a tetracycline-responsive bi-directional minimal CMV promoter (TRE-Tight; tetO) targeted to the ROSA26 locus.</td>
</tr>
</tbody>
</table>
User Notifications: Save Searches

Provide user regular updates associated with user’s saved search via webpage alert and e-mail.
A core community resource: SciCrunch Registry

ON PAGE 1 SHOWING 20 OUT OF 195 RESULTS FROM 1 SOURCES

Antibody Registry

http://antibodyregistry.org/

Public registry of antibodies with unique identifiers for commercial and non-commercial antibody reagents to help researchers identify antibodies used in publications. The registry contains antibody product information organized according to genes, species, reagent types (antibodies, recombinant proteins, ELISA, siRNA, cDNA clones). Data is provided in many formats so that authors of biological papers, text mining tools and funding agencies can quickly and accurately find antibody information.

AASK Clinical Trial and Cohort Study


Clinical trial investigating whether a specific class of antihypertensive drugs (beta-adrenergic blockers, calcium channel blockers, or angiotensin-converting enzyme inhibitors) and/or the level of blood pressure would influence progression of hypertensive kidney disease in African Americans. The initiative consists of 21 clinical centers and a data-coordinating center is followed by a continuation of AASK Cohort Study to investigate the environmental, socio-economic, genetic, physical factors...

Boston Area Community Health Survey


An epidemiologic study being conducted in the Boston metropolitan area to examine the prevalence of symptoms for health problems such as interstitial cystitis, urinary incontinence, benign prostatic hyperplasia, prostatitis, hypogonadism, and sexual function. Of interest to the survey are health disparities and inequalities. BACH is especially concerned with lack of adequate health insurance, lack of access to adequate medical care, and how these problems influence patterns of disease...

Complementary and Alternative Medicine for Urological Symptoms
Automated text mining is used to look for “web page last updated” or copyright dates

Identified for 570 resources

373 were not updated within the last 2 years (65%)

Manual review of ~200 resources

38 not updated within the past 2 years (~20%)

8 migrated to new addresses or institutions

7 are no longer in service (~3%)

3 were deemed no longer appropriate
Text Mining for Resources

A. PMC Registry Mentions detected by URL

Filter By: Resource Name: ImageJ Filter

Previous 1 2 3 Next

URL               Context
http://rsb.info.nih.gov/ij The minimal constant fluorescence count outside was considered as background. In background-subtraction the whole rounded structure was set to enclose the whole rounded structure macro implemented in ImageJ ( http://rsb.info.nih.gov/ij ).

B. PMC Registry Mentions detected by NER

Filter

Resource Name: ImageJ default Filter

1 2 3 4 5 6 7 8 9 10. 128 Next

<table>
<thead>
<tr>
<th>Entity</th>
<th>Context</th>
<th>PMID</th>
<th>Registry</th>
<th>Annotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image J</td>
<td>Borders of the infarct in the image of each brain slice were outlined and the area quantified ( NIH Image J software ).</td>
<td>24008734</td>
<td>ImageJ</td>
<td></td>
</tr>
<tr>
<td>Image J</td>
<td>Total tumor area versus total tumor/bone interface was scored using Image J.</td>
<td>22569336</td>
<td>ImageJ</td>
<td></td>
</tr>
<tr>
<td>Image J</td>
<td>Fluorescence intensity measurements were performed using Image J version 1.43 s ( <a href="http://rsb.info.nih.gov/ij">http://rsb.info.nih.gov/ij</a> ) .</td>
<td>24336483</td>
<td>ImageJ</td>
<td></td>
</tr>
<tr>
<td>Image J</td>
<td>To introduce noise we used the 'Add Specific Noise' routine within Image J, setting this at 5 , 10 and 15 standard deviations for various test cases .</td>
<td>22017789</td>
<td>ImageJ</td>
<td></td>
</tr>
<tr>
<td>Image J</td>
<td>All area calculations were performed with Image J ( ver 1.42q ).</td>
<td>22131640</td>
<td>ImageJ</td>
<td></td>
</tr>
<tr>
<td>Image J</td>
<td>Following tracing , the Image J software calculated the wound area .</td>
<td>21559060</td>
<td>ImageJ</td>
<td></td>
</tr>
<tr>
<td>Image J</td>
<td>Image analysis was performed using Image J to quantify the nuclear staining intensity per unit of area .</td>
<td>20875127</td>
<td>ImageJ</td>
<td></td>
</tr>
</tbody>
</table>
User Notifications: Resource Subscriptions

1. Users can track their resources

2. Provides updated information on citations of their resources

3. Resource mentions are retrieved from external data source, text mining, and user submission

Gene programs and functional effects is however far from ant [15] and may give cell and target specificity for a nuclear hormone to interact with nuclear receptors, as co-activators, co-

The Nuclear receptor signaling atlas; http://www.nursa.org/; expressed in human endothelial cells. Although less is known about actions in vascular cells, in macrophages, the PPARγ co-target for the anti-atherosclerotic actions of conjugated

PME20320410

Nuclear receptors in vascular biology.

Bishop-Bailey D. Current atherosclerosis reports 2015

Nuclear receptors sense a wide range of steroids and hormones (estrogens, progesterone, androgens, glucocorticoids, and mineralocorticoids), vitamins (A and D), lipophilic metabolites, catecholamines, and xenobiotics. In response to these diverse but extremely important mediators, nuclear receptors regulate the homeostatic control of lipids, carbohydrate, cholesterols, and xenobiotic drug metabolism, inflammation, cell differentiation and development, including vascular development. The nuclear receptor family is one of the most important groups of signaling molecules in the body and as such represent some of the most important established and emerging clinical and therapeutic targets. This review will highlight some of the recent trends in nuclear receptor biology related to vascular biology.
User Notifications: Resource Subscriptions

New resource mentions in the literature:

**Nuclear Receptor Signaling Atlas**

- Regulators of Androgen Action Resource: a one-stop shop for the comprehensive study of androgen receptor action.

New results in your saved searches:

Your saved search NIDDK grant awardees for the query "NIDDK" in the community NIDDK Information Network has new results
Resource Analytics
Facilitating broad use of biomedical digital assets

Aggregation and Discovery platforms like dkNET can help mediate this complex world, much as the journals do for publishing articles.
RRIDs

An easy, practical method for improving reproducibility and transparency
Unique ID’s for all! Resource Identification Initiative

- It is currently impossible to query the biomedical literature to find out what research resources have been used to produce the results of a study.
- Authors don’t provide enough information to unambiguously identify key research resources.
- Impossible to find all studies that used a resource.
- Critical for reproducibility and data mining.
- Critical for trouble-shooting.

Faulty Antibodies Continue to Enter US and European Markets, Warns Top Clinical Chemistry Researcher-Genome Web Daily, October 11, 2013
Digital objects are a new beast

Some Xerox Copiers Are Going Rogue and Changing Numbers for Fun

Trust: Not just *who* produced it but *what* produced it

The Effects of FreeSurfer Version, Workstation Type, and Macintosh Operating System Version on Anatomical Volume and Cortical Thickness Measurements

Ed H. B. M. Gronenschild, Petra Habets, Heidi I. L. Jacobs, Ron Mengelers, Nico Rozendaal, Jim van Os, Machteld Marcelis

Published: Jun 01, 2012 • DOI: 10.1371/journal.pone.0038234

RRID: Provides foundation for establishing an alerting service for research resources
Flow cytometry

Splenocytes were purified by standard methods using mechanical disruption and hypotonic red blood cell lysis. Mice peritoneal cavities were lavaged with 5 mL of sterile PBS. Splenocytes and peritoneal cells were blocked with PBS/10% fetal calf serum (FCS) for 20 minutes on ice and then stained with FITC-anti-human CD19 (Becton Dickinson [BD], Franklin Lakes, NJ), PE-anti-human CD5 (BD), APC-anti-human CD20 (BioLegend, San Diego, CA), FITC-anti-human CD4 (BioLegend), FITC-anti-human CD8 (BioLegend) or APC-anti-human CD3 as indicated for 30–60 minutes at 4°C Celsius in PBS/2% FCS. Cells were washed in PBS/2% FCS and fixed in PBS/2% paraformaldehyde Cells (Cages, Singapore) and WNM-1.

ELISA

Animals were bled retro-orbitally into PBS. MaxiSorp plates were coated with anti-IgM (SouthernBiotech, Birmingham, AL) washed 5x with PBS/0.05% Tween 20 (PBS-T) and then incubated with mouse sera samples were incubated in PBS-T and then incubated with alkaline phosphatase (Sigma-Aldrich, St. Louis, MO) and p-nitrophenyl phosphate (Sigma-Aldrich) for 3 h at 37°C. Plates were washed 5x with PBS-T and incubated with substrate solution. The reaction was stopped with 1 M NaOH and the optical density at 405 nm (OD405) was measured. Results were analyzed using the GraphPad InStat software. Pathology and injury scores were carried out as described.
But the author knows what was used! This author got back to us within 2 hours with the stock number of this mouse.
Authors supply database accession numbers for key research resources used in research

Experimental Procedures

Zebrafish Maintenance and Care

Fish were raised and bred at 28°C on a 14 hr/10 hr light/dark cycle. Embryos and larvae were raised in Danieau's medium (58 mM NaCl, 0.7 mM KCl, 0.4 mM MgSO₄, 0.6 mM Ca(NO₃)₂, 5 mM HEPES, and 0.5 mg/l methylene blue [pH 7.6]). All animal procedures were approved by the local governmental authorities (Regierung Oberbayern).

Zebrafish Lines

The transgenic lines Tg(Shha:GFP)t10 (Neumann and Nuesslein-Volhard, 2000; RRID: ZFIN_ZDB-GENO-060207-1), Tg(eiev3:Gal4-VP16)ms5 (Kimura et al., 2008), Tg(iph2:Gal4ff)y228 (Yokogawa et al., 2012; RRID: ZFIN_ZDB-GENO-121114-19), Tg(EaGal4mpn354) (Barker and Baier, 2015), Elt(Gal4-VP16)s10385 (Scott et al., 2007; RRID: ZFIN_ZDB-GENO-110912-8), Tg(isl2b:Gal4-VP16)zc60 (Ban Fredj et al., 2010; RRID: ZFIN_ZDB-GENO-150320-5), Tg(UAS:GCaMP5)zi352 (Akerboom et al., 2012), Tg(UAS:GCaMP6s)mptn101 (Thiele et al., 2014; RRID: ZFIN_ZDB-GENO-140811-5), Tg(UAS:GFP)mptn100 (Thiele et al., 2014; RRID: ZFIN_ZDB-GENO-140812-1), and Tg(UAS:ntr-mCherry)c264 (Davison et al., 2007; RRID: ZFIN_ZDB-GENO-070316-1) were previously reported. The transgenic line Tg(gad1b:Gal4-VP16)mptn155 was generated by inserting a DNA fragment containing a Gal4VP16 sequence and a myl7:mCherry (bleeding heart) cassette downstream of the gad1b promoter in a bacterial artificial chromosome (BAC) (clone #CH211-24M22), using standard recombining and Tol2-mediated transgenesis techniques (Bussmann and Schulte-Merker, 2011).

Zebrafish harboring the grh5367 mutation (RRID: ZFIN_ZDB-GENO-121109-4) were identified in a forward genetic screen (Muto et al., 2005 and Ziv et al., 2013). Larvae for the experiments were obtained by crossing grh5367 heterozygous fish. Genotyping was carried out by sequencing the PCR product generated with primers flanking the genomic region containing the point mutation (forward: 5'-AATTACCCTGTTGCGGCGCAAAC-3', reverse: 5'-CTCAGTTTATCCACATTTATGCAGCTC-3').
Neuron

Volume 90, Issue 3, 4 May 2016, Pages 596–608

Article
Feeding State Modulates Behavioral Choice and Processing of Prey Stimuli in the Zebrafish Tectum

Alessandro Filosa1, Alison J. Barker1, Marco Dal Maschio1, Herwig Baier1

doi:10.1016/j.neuron.2016.03.014

Highlights
- Feeding state influences approach versus avoidance decisions in zebrafish
- Hunger alters the neural representation of prey-like stimuli in the tectum
- The neuroendocrine and serotonergic systems mediate the modulation by feeding state

Summary
Animals use the sense of vision to scan their environment, respond to threats, and locate food sources. The neural computations underlying the selection of a particular behavior, such as escape or approach, require flexibility to balance potential costs and benefits for survival. For example, avoiding novel visual objects reduces predation risk but negatively affects foraging success. Zebrafish larvae approach small, moving objects (“prey”) and avoid large, looming objects (“predators”). We found that this binary classification of objects by size is strongly influenced by feeding state. Hunger shifts behavioral decisions from avoidance to approach and recruits additional prey-responsive neurons in the tectum, the main visual processing center. Both behavior and tectal function are modulated by signals from the hypothalamic-pituitary-interrenal axis and the
Materials automatically detected by SciBot(s)  
Made openly available

stimuli.

Experimental Procedures

Zebrafish Maintenance and Care

Fish were raised and bred at 28°C on a 14 hr/10 hr light/dark cycle. Embryos and larvae were raised in Danieau's medium (58 mM NaCl, 0.7 mM KCl, 0.4 mM MgSO₄, 0.6 mM Ca(NO₃)₂, 5 mM HEPES, and 0.5 mg/l methylene blue [pH 7.6]). All animal procedures were approved by the local government authorities (Regierung Oberbayern).

Zebrafish Lines

The transgenic lines Tg(Shha:GFP)t10 ( Neumann and Nuesslein-Volhard, 2000; RRID: ZFIN_ZDB-GENO-060207-1), Tg(elavl3:Gal4-VP16)nsns6 (Kimura et al., 2008), Tg(tph2:Gal4ff)y228 (Yokogawa et al., 2012; RRID: ZFIN_ZDB-GENO-121114-19), Tg(Gal4mpn354) (Barker and Baier, 2015), E1(Tgal4-VP16)s1038t (Scott et al., 2007; RRID: ZFIN_ZDB-GENO-110912-8), Tg(isl2b:Gal4-VP16)zc60 (Ben Fredj et al., 2010; RRID: ZFIN_ZDB-GENO-150320-5), Tg(UAS:GCaMP5)zf352 (Akerboom et al., 2012), Tg(UAS:GCaMP6s)mpn101 (Thiele et al., 2014; RRID: ZFIN_ZDB-GENO-140811-5), Tg(UAS:GFP)mpn100 (Thiele et al., 2014; RRID: ZFIN_ZDB-GENO-140812-1), and Tg(UAS:ntr-mCherry)c264 (Davison et al., 2007; RRID: ZFIN_ZDB-GENO-070316-1) were previously reported. The transgenic line Tg(gad1b:Gal4-VP16)mpn155 was generated by inserting a DNA fragment containing a Gal4VP16 sequence and a myl7:mCherry (bleeding heart) cassette downstream of the gad1b promoter in a bacterial artificial chromosome (BAC) (clone CH211-24M22), using standard recombinering and Tol2-mediated transgenesis techniques (Bussmann and Schulte-Merker, 2011).

Zebrafish harboring the gr8357 mutation (RRID: ZFIN_ZDB-GENO-121109-4) were identified in a forward genetic screen (Muto et al., 2005 and Ziv et al., 2013). Larvae for this study were provided by Dr. Erez Ziv (Kenyon College, Kenyon, OH). Gr8357 zebrafish were genotyped using a PCR-based method (see supplementary methods).
Increased identifiability of resources after the Resource Identification Initiative Pilot

Bandrowski et al, 2015
New Authentication of Key Biological Resources Guidelines are already affecting most NIH applications (May 2016 deadline)
Which Journals now ask for RRIDs?

~25 Elsevier Journals – typesetting + App

BMC – checklist, typesetting*

Frontiers – moving to typesetting*

Cell Press – author nagging, typesetting

Wiley – author nagging, typesetting

Working with Endocrine Society for incorporation of RRIDs
dkNET for Developers...
Application Programming Interfaces (APIs)

1. API specification, infrastructure and initial services for push and pull of data

2. Service documentation using Swagger.io

3. Portal dashboard for requesting API keys (e.g. Project based keys)

4. Future: Additional services for resources

5. Future: Applets using the published APIs that can be embedded on external sites
RRID Resolver Service

SciCrunch

Search for RRIDs

Anti-Tyrosine Hydroxylase antibody
RRID:AB_90755

Antibody ID
AB_90755

Target Antigen
Tyrosine Hydroxylase

Proper Citation
(Millipore Cat# AB1542, RRID:AB_90755)

Reference
PMIDs (24)

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dkNET and the NIH BD2K Data Discovery Index (bioCADDIE)

A Focus on the Community
Big data sets of particular interest to NIH and not covered by aggregators.

e.g. NIH Commons

Major aggregator services (i.e., indices or repositories that use a common metadata format)
Interactions with Community Aggregators

$ Funding

Protocols

Community Resources

Resource Identification Initiative

Best Practices

Global Data Set Index
Thank You...