Supplemental Materials in Dynamic E-Journals

이 춘 실
숙명여대 문헌정보학과

목 차

- E-journal의 진화
- 논문의 다양한 Supplemental Materials (보조 자료)와 급격한 증가 현상
- Supplemental Materials를 적극적으로 수용하기 위하여 필요한 조치
- 참고문헌

E-journal의 진화

- 학술지 인쇄본 (Print Journal)에 수록하지 않은 (못한) 보충 자료

  → Online 학술지 (Electronic Journal)의 특성을 적극적으로 활용한 다양한 내용과 다양한 형식의 자료 제공, 또는 링크 제공
- Supplementary Materials

  → Supplemental Journal Article Materials
- Additional Contents → Integral Contents

- 학술지 인쇄본 (Print Journal)에 수록하지 않은 (못한) 보충 자료

  → Online 학술지 (Electronic Journal)의 특성을 적극적으로 활용한 다양한 내용과 다양한 형식의 자료 제공, 또는 링크 제공

- Supplementary Materials

  → Supplemental Journal Article Materials

Korean Journal of Urology
www.kjurology.org
Aims and Scope | Instructions to Authors | Online Submission

Journal List > Korean J Urol > v.51(9); Sep 2010

Original Article — Open Access

Korean J Urol. 2010 Sep;51(9):601-612. English.
Published online 2010 September 16. http://dx.doi.org/10.4111/kju.2010.51.9.601

Development and Validation of the Korean Version of Expanded Prostate Cancer Index Composite: Questionnaire Assessing Health-Related Quality of Life after Prostate Cancer Treatment

Kyung Jin Chung, Jung Jun Kim,[1] Soo Hyun Lim,[1] Tae Heon Kim,[1] Deok Hyun Han,[1] and Sung Won Lee[1]

Department of Urology, Gachon University Gil Hospital, Incheon, Korea.

[1]Department of Urology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea.

Corresponding Author: Sung Won Lee. Department of Urology, Samsung Medical Center, Sungkyunkwan University School of Medicine, 50, Irwon-dong, Gangnam-gu, Seoul 135-710, Korea. TEL: +82-2-3410-3552, FAX: +82-2-3410-3027, Email: drswlee@skku.edu

Received June 01, 2010; Accepted July 28, 2010.

Abstract

Go to:

Purpose

Although the quality of life (QoL) of prostate cancer (PCa) patients is a major issue, there is no unified and useful methodology for assessing QoL. The Expanded Prostate Cancer Index Composite (EPIC) is a globally used tool to measure QoL after PCa treatment that comprises urinary, bowel, sexual, and hormonal domains. Acknowledging the need for such a tool applicable to Korean PCa patients, we translated EPIC into Korean and validated the new version.

Materials and Methods

The Korean version of EPIC was devised by translation, back-translation, and reconciliation. Subsequently, we randomly selected 153 patients with localized PCa treated with radical perineal prostatectomy (67, 43.8%), radical retropubic prostatectomy (19, 12.4%), laparoscopic radical prostatectomy (12, 7.8%), robot-assisted laparoscopic radical prostatectomy (36, 23.5%), and high-intensity focused ultrasound ablation of the prostate (19, 12.4%) and asked them to complete EPIC. Reliability was assessed by test-retest correlation and Cronbach's alpha. Validity was assessed by factor analysis, interscale correlation, and correlation with Functional Assessment of Cancer Therapy-Prostate (FACT-P).

Results

Test-retest correlation and Cronbach's alpha were high in each of the domains (0.92, 0.91, 0.76, 0.84 and 0.86, 0.84, 0.92, 0.83, p<0.0001). Interscale correlation among the domains was low (r<0.37), which indicated that EPIC is composed of proper domains. Interscale correlation between the function and bother subscales was high (0.94, 0.81, 0.84 and 0.80, p<0.0001). EPIC domains had low correlation with FACT-P, permitting complementary use.

Conclusions

The Korean version of EPIC was developed by a proper process, as evident by its high reliability and validity. Therefore, it is a reliable, comprehensive, systematic method that evaluates QoL in Korean patients after PCa treatment. Furthermore, it can be adapted as an objective methodology for research globally.

Keywords: Prostatic neoplasms, Quality of life, Reproducibility of results.

INTRODUCTION

Go to:

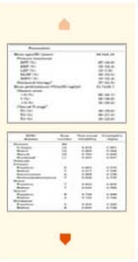
Prostate cancer (PCa) is the fifth most common cancer in the Korean male population as well as the most rapidly growing cancer in the population group [1]. Owing to early diagnosis

Formats:
Abstract
Article
PubReader
PDF
Figures + Tables
References
Supplementary Materials

Links to:
KoreaMed
the Journal

Export:
Download Citation
E-mail
Twitter
Facebook

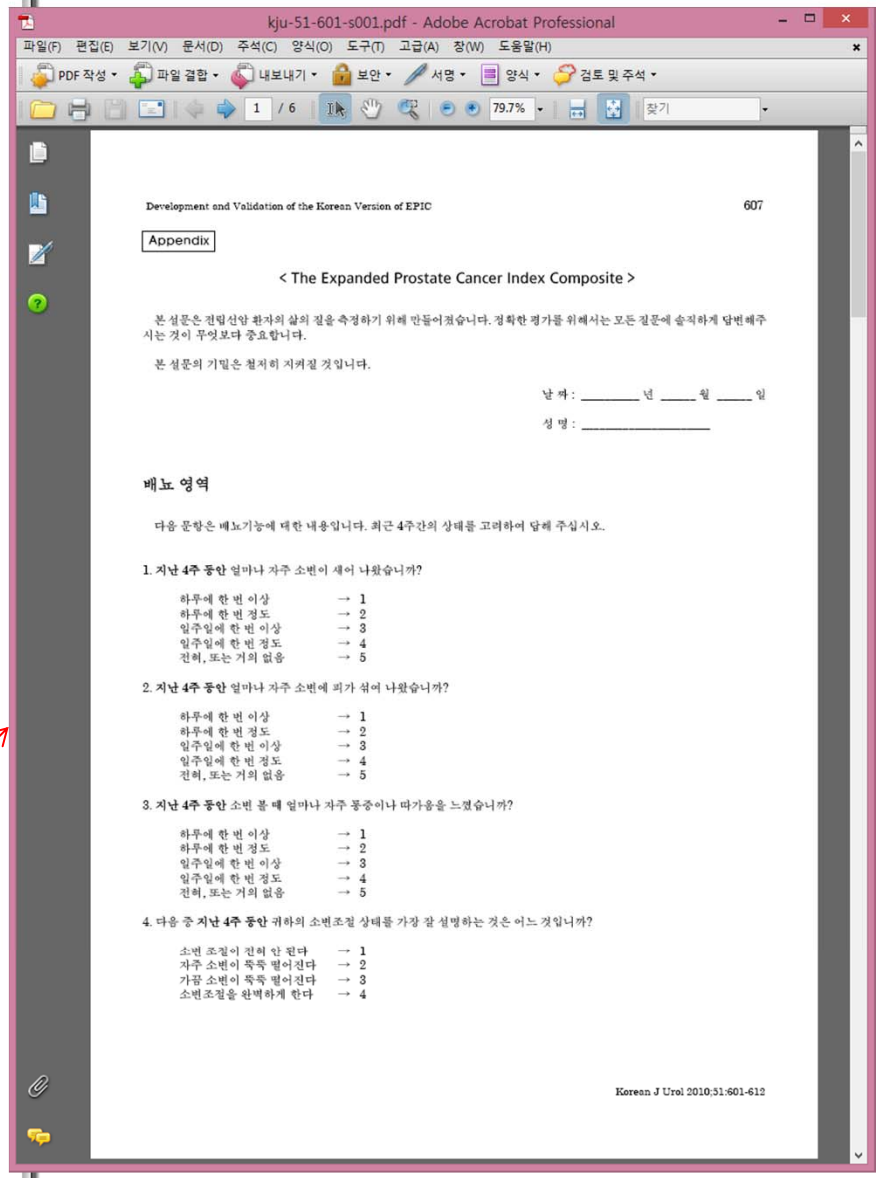
Tables:



Show all...

Supplementary Materials:
Supplementary Material (225K, pdf)
Show all...

PDF file



kju-51-601-s001.pdf - Adobe Acrobat Professional

Development and Validation of the Korean Version of EPIC 607

Appendix

< The Expanded Prostate Cancer Index Composite >

본 설문은 전립선암 환자의 삶의 질을 측정하기 위해 만들어졌습니다. 정확한 평가를 위해서는 모든 질문에 솔직하게 답변해주시는 것이 무엇보다 중요합니다.

본 설문의 기밀은 철저히 지켜질 것입니다.

날 짜 : _____ 년 _____ 월 _____ 일

성 명 : _____

배뇨 영역

다음 문항은 배뇨기능에 대한 내용입니다. 최근 4주간의 상태를 고려하여 답해 주십시오.

1. **지난 4주 동안** 얼마나 자주 소변이 새어 나왔습니까?

하루에 한 번 이상 → 1
하루에 한 번 정도 → 2
일주일에 한 번 이상 → 3
일주일에 한 번 정도 → 4
전혀, 또는 거의 없음 → 5

2. **지난 4주 동안** 얼마나 자주 소변에 피가 섞여 나왔습니까?

하루에 한 번 이상 → 1
하루에 한 번 정도 → 2
일주일에 한 번 이상 → 3
일주일에 한 번 정도 → 4
전혀, 또는 거의 없음 → 5

3. **지난 4주 동안** 소변 볼 때 얼마나 자주 통증이나 따가움을 느꼈습니까?

하루에 한 번 이상 → 1
하루에 한 번 정도 → 2
일주일에 한 번 이상 → 3
일주일에 한 번 정도 → 4
전혀, 또는 거의 없음 → 5

4. 다음 중 **지난 4주 동안** 귀하의 소변조절 상태를 가장 잘 설명하는 것은 어느 것입니까?

소변 조절이 전혀 안 된다 → 1
자주 소변이 뚝뚝 떨어진다 → 2
가끔 소변이 뚝뚝 떨어진다 → 3
소변조절을 완벽하게 한다 → 4

Korean J Urol 2010;51:601-612

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Genomic and Epigenomic Landscapes of Adult De Novo Acute Myeloid Leukemia

The Cancer Genome Atlas Research Network

May 1, 2013 | DOI: 10.1056/NEJMoa1301689

Comments open through May 8, 2013

BACKGROUND

Many mutations that contribute to the pathogenesis of acute myeloid leukemia (AML) are undefined. The relationships between patterns of mutations and epigenetic phenotypes are not yet clear.

Full Text of Background...

METHODS

We analyzed the genomes of 200 clinically annotated adult cases of de novo AML, using either whole-genome sequencing (50 cases) or whole-exome sequencing (150 cases), along with RNA and microRNA sequencing and DNA-methylation analysis.

Full Text of Methods...

RESULTS

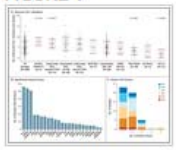
AML genomes have fewer mutations than most other adult cancers, with an average of only 13 mutations found in genes. Of these, an average of 5 are in genes that are recurrently mutated in AML. A total of 23 genes were significantly mutated, and another 237 were mutated in two or more samples. Nearly all samples had at least 1 nonsynonymous mutation in one of nine categories of genes that are almost certainly relevant for pathogenesis, including transcription-factor fusions (18% of cases), the gene encoding nucleophosmin (*NPM1*) (27%), tumor-suppressor genes (16%), DNA-methylation–related genes (44%), signaling genes (59%), chromatin-modifying genes (30%), myeloid transcription-factor genes (22%), cohesin-complex genes (13%), and spliceosome-complex genes (14%).

MEDIA IN THIS ARTICLE

Video

Acute Myeloid Leukemia (AML).

FIGURE 1



Characterization of Mutations.

TOOLS

PDF | Print | Download Citation | Supplementary Material
E-Mail | Save | Article Alert | Reprints | Permissions | Share/Bookmark

RELATED ARTICLES

The NEW ENGLAND JOURNAL of MEDICIN

ORIGINAL ARTICLE

Genomic and Epigenomic Landscapes of Adult De Nov
Acute Myeloid Leukemia

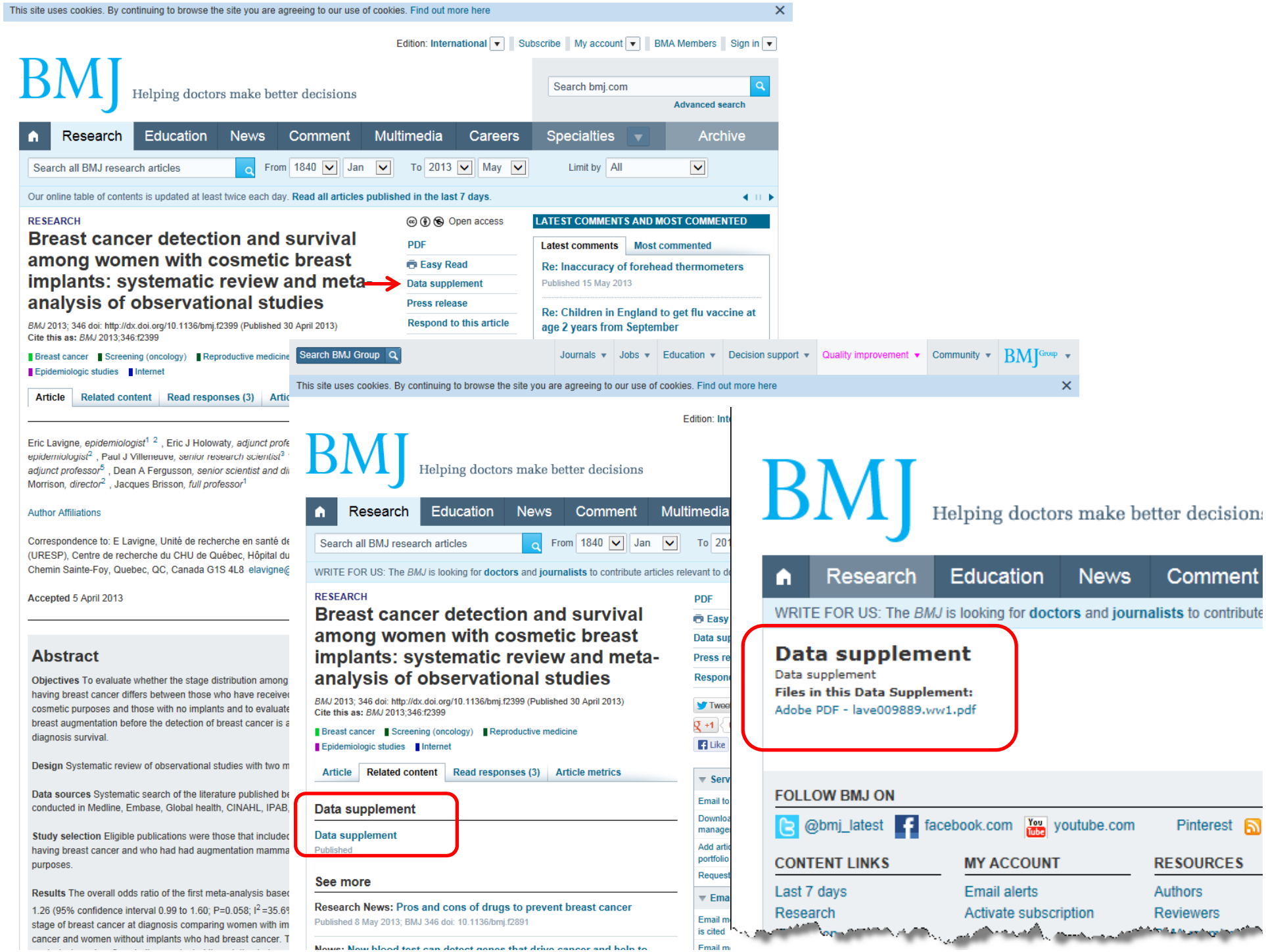
Supplementary Material

Supplementary Appendix (PDF File, 11629KB)

Disclosure Forms (PDF File, 2802KB)

April 24, 2013 | A.L. Kellermann and K. Peleg

More Trends ›


This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out more here
Edition: International
Subscribe
My account
BMA Members
Sign in
BMJ
Helping doctors make better decisions
Search bmj.com
Advanced search
Research
Education
News
Comment
Multimedia
Careers
Specialties
Archive
Search all BMJ research articles
From 1840 Jan
To 2013 May
Limit by All
Our online table of contents is updated at least twice each day. Read all articles published in the last 7 days.
RESEARCH
Breast cancer detection and survival among women with cosmetic breast implants: systematic review and meta-analysis of observational studies
BMJ 2013; 346 doi: http://dx.doi.org/10.1136/bmj.f2399 (Published 30 April 2013)
Cite this as: BMJ 2013;346:f2399
Breast cancer
Screening (oncology)
Reproductive medicine
Epidemiologic studies
Internet
Open access
PDF
Easy Read
Data supplement
Press release
Respond to this article
LATEST COMMENTS AND MOST COMMENTED
Latest comments
Most commented
Re: Inaccuracy of forehead thermometers
Published 15 May 2013
Re: Children in England to get flu vaccine at age 2 years from September
Search BMJ Group
Journals
Jobs
Education
Decision support
Quality improvement
Community
BMJ Group
This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out more here
Article
Related content
Read responses (3)
Eric Lavigne, epidemiologist[1 2], Eric J Holowaty, adjunct profe
epidemiologist[2], Paul J Villeneuve, senior research scientist[3]
adjunct professor[5], Dean A Fergusson, senior scientist and di
Morrison, director[2], Jacques Brisson, full professor[1]
Author Affiliations
Correspondence to: E Lavigne, Unité de recherche en santé de
(URESP), Centre de recherche du CHU de Québec, Hôpital du
Chemin Sainte-Foy, Quebec, QC, Canada G1S 4L8 elavigne@
Accepted 5 April 2013
Abstract
Objectives To evaluate whether the stage distribution among
having breast cancer differs between those who have receive
cosmetic purposes and those with no implants and to evaluate
breast augmentation before the detection of breast cancer is a
diagnosis survival.
Design Systematic review of observational studies with two m
Data sources Systematic search of the literature published be
conducted in Medline, Embase, Global health, CINAHL, IPAB,
Study selection Eligible publications were those that include
having breast cancer and who had had augmentation mamma
purposes.
Results The overall odds ratio of the first meta-analysis based
1.26 (95% confidence interval 0.99 to 1.60; P=0.058; I²=35.6%
stage of breast cancer at diagnosis comparing women with im
cancer and women without implants who had breast cancer. T
Edition: Int
BMJ
Helping doctors make better decisions
Research
Education
News
Comment
Multimedia
Search all BMJ research articles
From 1840 Jan
To 201
WRITE FOR US: The BMJ is looking for doctors and journalists to contribute articles relevant to d
RESEARCH
Breast cancer detection and survival among women with cosmetic breast implants: systematic review and meta-analysis of observational studies
BMJ 2013; 346 doi: http://dx.doi.org/10.1136/bmj.f2399 (Published 30 April 2013)
Cite this as: BMJ 2013;346:f2399
Breast cancer
Screening (oncology)
Reproductive medicine
Epidemiologic studies
Internet
Article
Related content
Read responses (3)
Article metrics
Data supplement
Data supplement
Published
See more
Research News: Pros and cons of drugs to prevent breast cancer
Published 8 May 2013; BMJ 346 doi: 10.1136/bmj.f2891
PDF
Easy
Data sup
Press re
Respon
Like
Email to
Add artic
portfolio
Request
Email m
is cited
BMJ
Helping doctors make better decision
Research
Education
News
Comment
WRITE FOR US: The BMJ is looking for doctors and journalists to contribute
Data supplement
Data supplement
Files in this Data Supplement:
Adobe PDF - lave009889.ww1.pdf
FOLLOW BMJ ON
@bmj_latest
facebook.com
youtube.com
Pinterest
CONTENT LINKS
Last 7 days
Research
MY ACCOUNT
Email alerts
Activate subscription
RESOURCES
Authors
Reviewers

Article Views
- Abstract
- Full Text
- Full Text (PDF)
- Figures Only
- Supplementary Materials

VERSION HISTORY
- 340/6133/711 (most recent)
- science.1234150v2
- science.1234150v1

Article Tools
- Save to My Folders
- Download Citation
- Alert Me When Article is Cited
- Post to CiteULike
- E-mail This Page
- Rights & Permissions
- Commercial Reprints and E-Prints
- View PubMed Citation

Related Content
In Other Science Products (Separate subscription may be required)
- Sci Transl Med Research Article by García et al.
- Sci Transl Med Research Article by Sundling et al.
- More Information on Related Content
- Loading Related Web Sites...

Similar Articles In:
- Science Magazine
- Loading Web of Science article data...

Published Online March 28 2013
Science 10 May 2013:
Vol. 340 no. 6133 pp. 711-716
DOI: 10.1126/science.1234150

‹ Prev | Table of Contents | Next ›
Read Full Text to Comment (0)
To Advertise | Find Products

RESEARCH ARTICLE

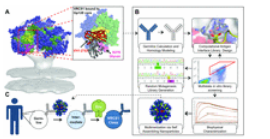
Rational HIV Immunogen Design to Target Specific Germline B Cell Receptors

Joseph Jardine[1,2,3,4]*, Jean-Philippe Julien[2,3,5]*, Se
Oleksandr Kalyuzhniy[1,2,3,4], Andrew McGuire[6], Dev
Meaghan Jones[1,2,4], Travis Nieusma[2,3,5], John Mat
Dennis R. Burton[1,2,3,7], Leonidas Stamatatos[8,9], Da
William R. Schief[1,2,3,4,†]

± Author Affiliations

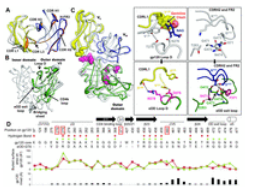
†Corresponding author. E-mail: schief@scripps.edu

* These authors contributed equally to this work.



View larger version:
» In this page » In a new window
» Download PowerPoint Slide for Teaching

Fig. 1
immu
(A) VF
parato
green,
are re
highlig
structu
highlig
gp120
class I
vaccine GL-prime-boost strategy to bridge this initi
somatic hypermutation of VRC01-class bNAbs pre



View larger version:
» In this page » In a new window
» Download PowerPoint Slide for Teaching

Fig. 2
(A) Th
antibo
respec
(white
on VR
PDBID
with th
high fl
crysta
unliga
3TGT,
betwe
VRC01+gp120 core (PDBID: 3NGB), in which only
rendered as in (A) and (B), except gp120-contacti

Article Views
- Abstract
- Full Text
- Full Text (PDF)
- Figures Only
- Supplementary Materials

Originally published in Science Express on March 28 2013
Science 10 May 2013:
vol. 340 no. 6133 pp. 711-716

Rational HIV Immunogen Design to Target Specific Germline B Cell Receptors

Joseph Jardine, Jean-Philippe Julien, Sergey Menis, Takayuki Ota, Oleksandr Kalyuzhniy, Andrew McGuire, D
Sok, Po-Ssu Huang, Skye MacPherson, Meaghan Jones, Travis Nieusma, John Mathison, David Baker, Andre
B. Ward, Dennis R. Burton, Leonidas Stamatatos, David Nemazee, Ian A. Wilson, William R. Schief

Materials/Methods, Supplementary Text, Tables, Figures, and/or References

Download Supplement

Materials and Methods
Figs. S1 to S26
Tables S1 to S9
References

Help with File Types

PDF | TEXT | SPREADSHEET | VIDEO | AUDIO | ZIP

PDF files can be opened using the Adobe Acrobat Reader or the full Acrobat package, as well as using third-packages such as GhostScript.

Download the Acrobat Reader (Adobe Research)

Synapse

Korean Journal of Radiology www.kjronline.org

About Us | Instructions for Authors | e-Submission

About Synapse
Overview
Help
Disclaimer

KoreaMed
KoMCI Korean Medical Citation Index
Korean Medical Journal Information
KAMJE Korean Association of Medical Journal Editors
WorldWideScience.org
CrossCheck
CrossRef Member
CrossRef Citedby

Powered by Synapse

Journal List > Korean J Radiol > v.11(1); Jan-Feb 2010

Review Article Open Access

ABSTRACT | ARTICLE | PUBREADER | PDF | FIGURES+TABLES | REFERENCES | SUPPL MATERIALS

Korean J Radiol. 2010 Jan-Feb;11(1):4-18. English.
Published online 2009 December 28. http://dx.doi.org/10.3348/kjr.2010.11.1.4

State-of-the-Art CT Imaging Techniques for Congenital Heart Disease

Hyun Woo Goo, MD

Department of Radiology and the Research Institute of Radiology, Asan Medical Center, University of Ulsan College of Medicine, Seoul 138-736, Korea.

Address reprint requests to: Hyun Woo Goo, MD, Department of Radiology and the Research Institute of Radiology, Asan Medical Center, University of Ulsan College of Medicine, Asanbyeongwon-gil 86, Songpa-gu, Seoul 138-736, Korea. Tel. (822) 3010-4388, Fax. (822) 476-0090, Email: hwgoo@amc.seoul.kr

Received July 19, 2009; Accepted August 19, 2009.

Abstract

Go to:

CT is increasingly being used for evaluating the cardiovascular structures and airways in the patients with congenital heart disease. Multi-slice CT has traditionally been used for the evaluation of the extracardiac vascular and airway abnormalities because of its inherent high spatial resolution and excellent air-tissue contrast. Recent developments in CT technology primarily by reducing the cardiac motion and the radiation dose usage in congenital heart disease evaluation have helped expand the indications for CT usage. Tracheobronchomalacia associated with congenital heart disease can be evaluated with cine CT. Intravenous contrast injection should be tailored to unequivocally demonstrate cardiovascular abnormalities. Knowledge of the state-of-the-art CT imaging techniques that are used for evaluating congenital heart disease is helpful not only for planning and performing CT examinations, but also for interpreting and presenting the CT image findings that consequently guide the proper medical and surgical management.

Keywords: Computed tomography (CT) techniques, Multi-slice CT, Congenital heart disease.

The recent developments in CT techniques are characterized by faster speed, longer anatomic coverage, a more flexible ECG-synchronized scan and a lower radiation dose, and these advances have noticeably increased the cardiac applications of CT. This increasing role of CT also includes the evaluation of congenital heart disease (1-3). Minimization of the radiation exposure delivered by CT is an important issue particularly for children (4,5). Various dose reduction techniques are currently available for cardiac CT as a result of the efforts to reduce the CT dose (6,7). Thus, cardiac radiologists should be familiar with the CT techniques that are associated with a cardiac protocol and dose reduction. The CT imaging techniques for congenital heart disease are not the same as those for acquired heart disease: they are different according to the imaged anatomic structures, the purposes of the study and the study population evaluated with CT (e.g. children and adults with congenital heart disease). The state-of-the-art CT imaging techniques for acquired heart disease have been extensively appraised and frequently updated, while those for congenital heart disease have not been thoroughly reviewed in the literature. In this article, I review the current CT imaging techniques for congenital heart disease. These include the CT scan techniques, the dose reduction techniques and the methods for intravenous injection of contrast agent. The current clinical

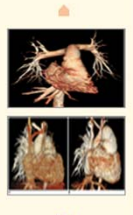
Formats:
- Abstract
- Article
- PubReader
- PDF
- Figures + Tables
- References
- Supplementary Materials

Cited by:
Synapse CrossRef articles (28)
KoMCI articles (4)

Links to:
- KoreaMed
- the Journal

Export:
- Download Citation
- E-mail
- Twitter
- Facebook

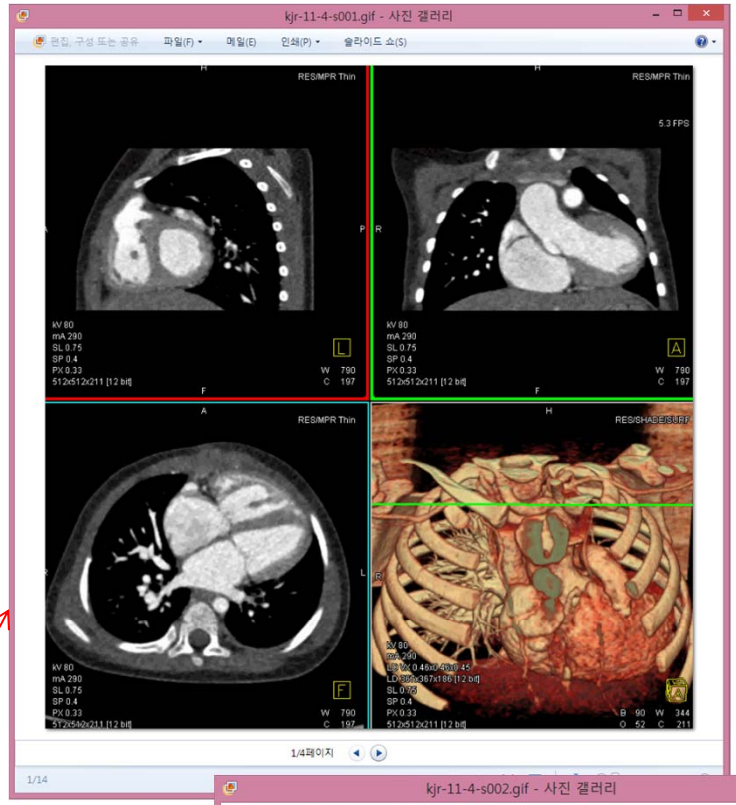
Figures:

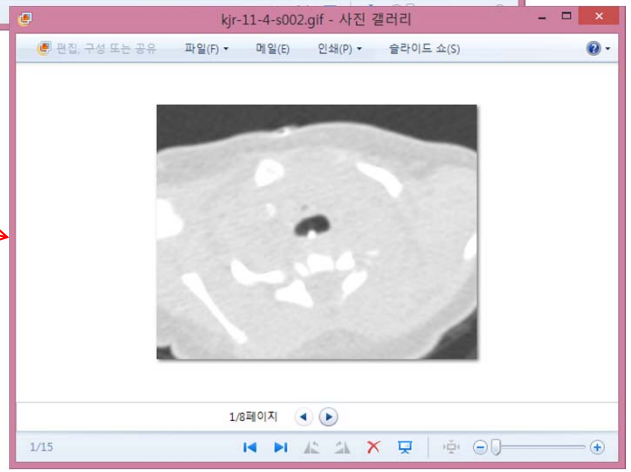


Show all...

Supplementary Materials:
Supplementary Material (859K, gif)
Supplementary Material (404K, gif)
Show all...

Image file (JPG, Gif, tif, etc.)



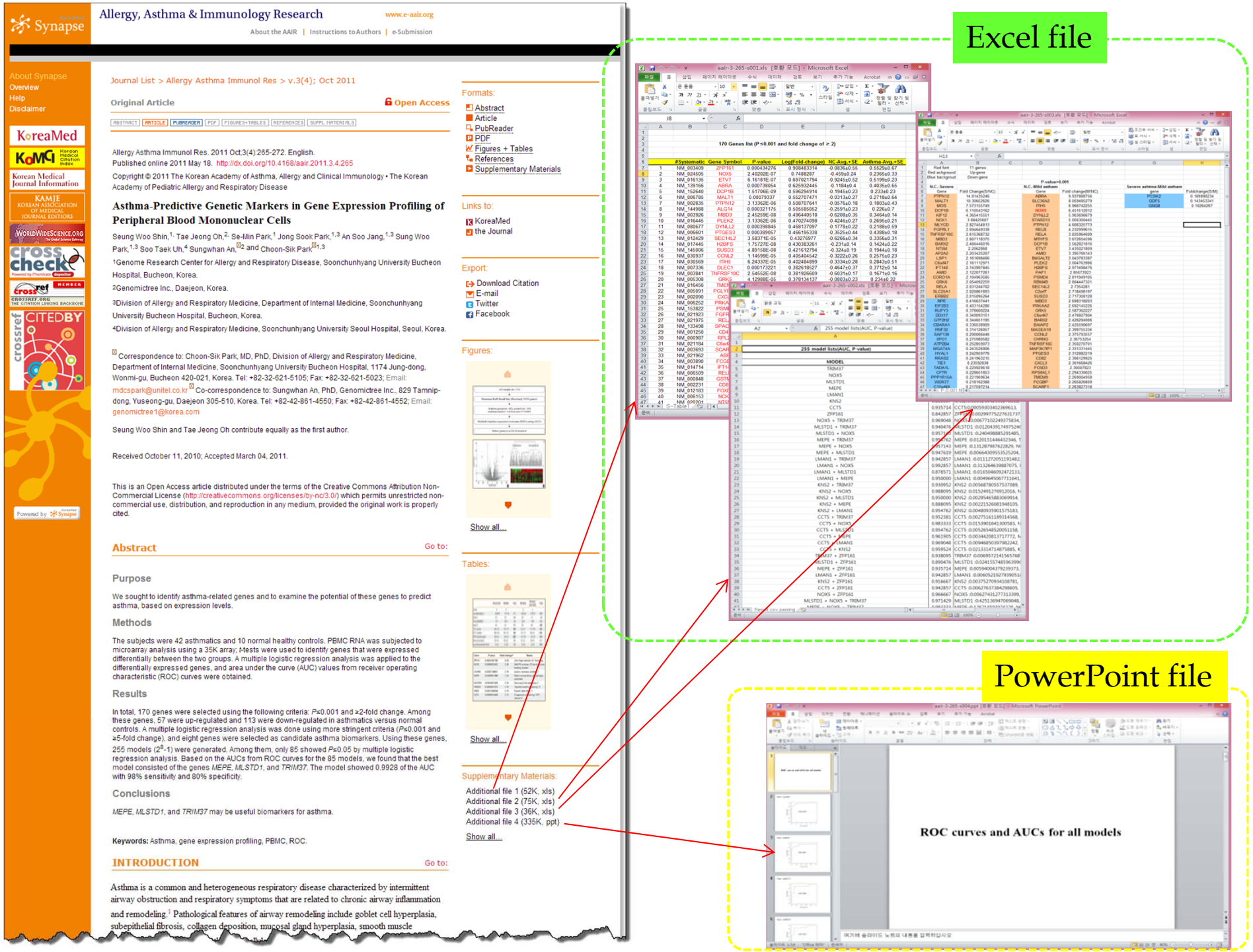


- 학술지 인쇄본 (Print Journal)에 수록하지 않은 (못한) 보충 자료

  → Online 학술지 (Electronic Journal)의 특성을 적극적으로 활용한 다양한 내용과 다양한 형식의 자료 제공, 또는 링크 제공

- Supplementary Materials

  → Supplemental Journal Article Materials



Synapse

Allergy, Asthma & Immunology Research www.e-aair.org

About the AAIR | Instructions to Authors | e-Submission

About Synapse
Overview
Help
Disclaimer

KoreaMed
KoMCI Korean Medical Citation Index
Korean Medical Journal Information
KAMJE KOREAN ASSOCIATION OF MEDICAL JOURNAL EDITORS
WorldWideScience.org
crosscheck
crossref MEMBER CROSSREF.ORG THE CITATION LINKING BACKBONE
crossref CITEDBY

Powered by Synapse

Journal List > Allergy Asthma Immunol Res > v.3(4); Oct 2011

Original Article Open Access

ABSTRACT | ARTICLE | PUBREADER | PDF | FIGURES+TABLES | REFERENCES | SUPPL MATERIALS

Allergy Asthma Immunol Res. 2011 Oct;3(4):265-272. English.
Published online 2011 May 18. http://dx.doi.org/10.4168/aair.2011.3.4.265

Asthma-Predictive Genetic Markers in Gene Expression Profiling of Peripheral Blood Mononuclear Cells

Seung Woo Shin,[1] Tae Jeong Oh,[2] Se-Min Park,[1] Jong Sook Park,[1,3] An Soo Jang,[1,3] Sung Woo Park,[1,3] Soo Taek Uh,[4] Sungwhan An,[2] and Choon-Sik Park[1,3]

[1]Genome Research Center for Allergy and Respiratory Disease, Soonchunhyang University Bucheon Hospital, Bucheon, Korea.

[2]Genomictree Inc., Daejeon, Korea.

[3]Division of Allergy and Respiratory Medicine, Department of Internal Medicine, Soonchunhyang University Bucheon Hospital, Bucheon, Korea.

[4]Division of Allergy and Respiratory Medicine, Soonchunhyang University Seoul Hospital, Seoul, Korea.

Correspondence to: Choon-Sik Park, MD, PhD, Division of Allergy and Respiratory Medicine, Department of Internal Medicine, Soonchunhyang University Bucheon Hospital, 1174 Jung-dong, Wonmi-gu, Bucheon 420-021, Korea. Tel: +82-32-621-5105; Fax: +82-32-621-5023; Email: mdcspark@unitel.co.kr Co-correspondence to: Sungwhan An, PhD, Genomictree Inc., 829 Tamnip-dong, Yuseong-gu, Daejeon 305-510, Korea. Tel: +82-42-861-4550; Fax: +82-42-861-4552; Email: genomictree1@korea.com

Seung Woo Shin and Tae Jeong Oh contribute equally as the first author.

Received October 11, 2010; Accepted March 04, 2011.

Abstract

Go to:

Purpose

We sought to identify asthma-related genes and to examine the potential of these genes to predict asthma, based on expression levels.

Methods

The subjects were 42 asthmatics and 10 normal healthy controls. PBMC RNA was subjected to microarray analysis using a 35K array; *t*-tests were used to identify genes that were expressed differentially between the two groups. A multiple logistic regression analysis was applied to the differentially expressed genes, and area under the curve (AUC) values from receiver operating characteristic (ROC) curves were obtained.

Results

In total, 170 genes were selected using the following criteria: $P \leq 0.001$ and ≥2-fold change. Among these genes, 57 were up-regulated and 113 were down-regulated in asthmatics versus normal controls. A multiple logistic regression analysis was done using more stringent criteria ($P \leq 0.001$ and ≥5-fold change), and eight genes were selected as candidate asthma biomarkers. Using these genes, 255 models (2^8-1) were generated. Among them, only 85 showed $P \leq 0.05$ by multiple logistic regression analysis. Based on the AUCs from ROC curves for the 85 models, we found that the best model consisted of the genes *MEPE*, *MLSTD1*, and *TRIM37*. The model showed 0.9928 of the AUC with 98% sensitivity and 80% specificity.

Conclusions

MEPE, *MLSTD1*, and *TRIM37* may be useful biomarkers for asthma.

Keywords: Asthma, gene expression profiling, PBMC, ROC.

INTRODUCTION

Go to:

Asthma is a common and heterogeneous respiratory disease characterized by intermittent airway obstruction and respiratory symptoms that are related to chronic airway inflammation and remodeling.[1] Pathological features of airway remodeling include goblet cell hyperplasia, subepithelial fibrosis, collagen deposition, mucosal gland hyperplasia, smooth muscle

Formats:
- Abstract
- Article
- PubReader
- PDF
- Figures + Tables
- References
- Supplementary Materials

Links to:
- KoreaMed
- the Journal

Export:
- Download Citation
- E-mail
- Twitter
- Facebook

Figures:

Show all...

Tables:

Show all...

Supplementary Materials:

Additional file 1 (52K, xls)
Additional file 2 (75K, xls)
Additional file 3 (36K, xls)
Additional file 4 (335K, ppt)

Show all...

Genome Medicine
December 2013, 4:102,
Open Access

HLA typing from RNA-Seq sequence reads

Sebastian Boegel, Martin Löwer, Michael Schäfer, Thomas Bukur, Jos de Graaf, Valesca Boisguérin, Özlem Türeci, Mustafa Diken, John C Castle, Ugur Sahin

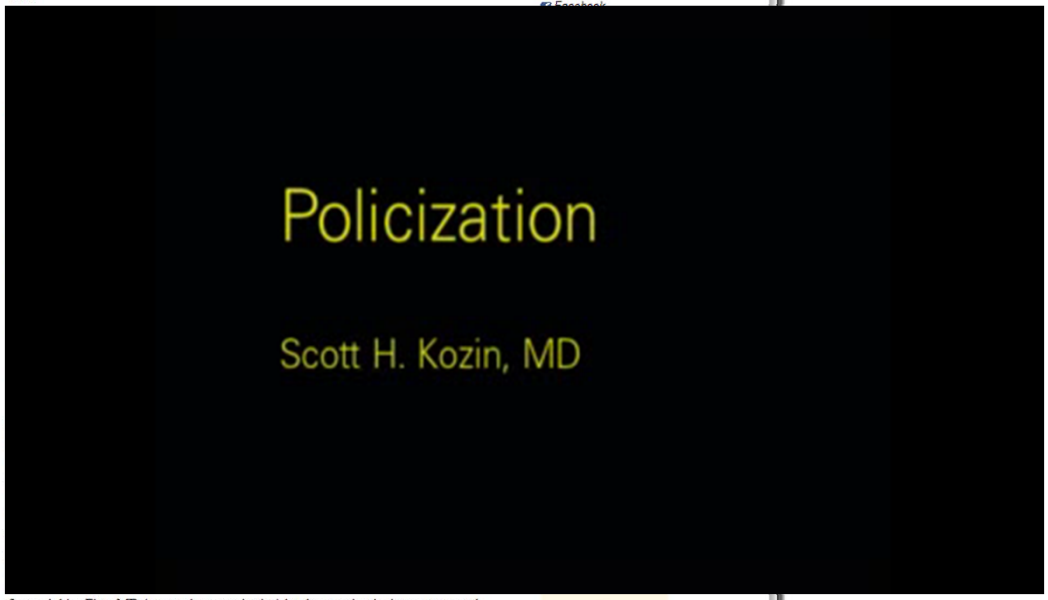
» Download PDF (807 KB) » View Article

Abstract

We present a method, seq2HLA, for obtaining an individual's human leukocyte antigen (HLA) class I and II type and expression using standard next generation sequencing RNA-Seq data. RNA-Seq reads are mapped against a reference database of HLA alleles, and HLA type, confidence score and locus-specific expression level are determined. We successfully applied seq2HLA to 50 individuals included in the HapMap project, yielding 100% specificity and 94% sensitivity at a P-value of 0.1 for two-digit HLA types. We determined HLA type and expression for previously un-typed Illumina Body Map tissues and a cohort of Korean patients with lung cancer. Because the algorithm uses standard RNA-Seq reads and requires no change to laboratory protocols, it can be used for both existing datasets and future studies, thus adding a new dimension for HLA typing and biomarker studies.

13073_2012_406_MOESM1_ESM.pptx (2069KB)
Additional file 1: Additional figures. Figure S1: Mean edit distances of all reference sequences (exon 2 and 3 = 546 nucleotides) within and between the groups of alleles to quantify and visualize HLA polymorphisms. Figure S2: Pedigree and HLA types of CEU individuals NA12892, NA12891 and NA12878. Figure S3: Comparison of the distribution of predicted HLA types of this study with population-specific HLA distributions. Figure S4: Average locus-specific expression of HLA class I and II in the 50 Montgomery test samples using seq2HLA. Figure S5: Locus-specific expression of HLA class I and II in the 16 Illumina Human Body Map samples. (PPTX 2 MB)

13073_2012_406_MOESM2_ESM.xlsx (76KB)
Additional file 2: Additional tables. Table S1: Number of alleles containing at least one f-mer, which is unique for this nucleotide sequence when compared with all alleles within a locus. Table S2: Accuracy of seq2HLA in determining the HLA class I type of the 50 Montgomery test samples using different mapping parameters. Table S3: HLA class I types of the 50 Montgomery test samples. Table S4: Sensitivity versus specificity of different mapping and technical parameters. Table S5: Number of true predictions, false predictions and missed alleles per allelic group. Table S6: Accuracy of seq2HLA in determining the HLA class II type of the 50 Montgomery test samples using the optimal mapping parameter. Table S7: HLA class II types of the 50 Montgomery test samples. Table S8: HLA class I (A) and class II (B) types of nine previously un-typed CEU HapMap individuals. Table S9: Predicted HLA class I types of 77 normal lung derived from Korean individuals. (XLSX 76 KB)

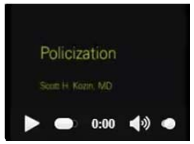


finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for policization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to policization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index policization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger policization. The parents are welcome to keep the "thumb", however; I avoid surgery to reconstruct a type IIB hypoplastic thumb as the results of index finger policization are far superior.[4]

Show all...

Supplementary Materials:

Supplementary Material



Thumbnail Video

High Resolution Video (16M, wmv)

Show all...

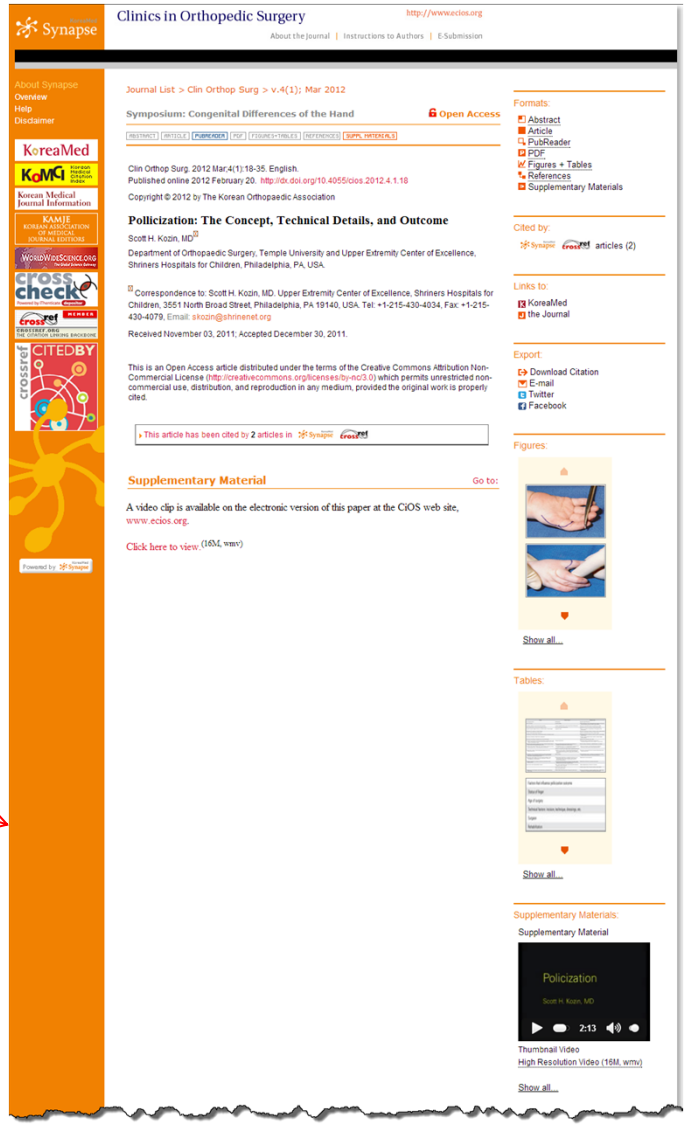
BRAIN PLASTICITY

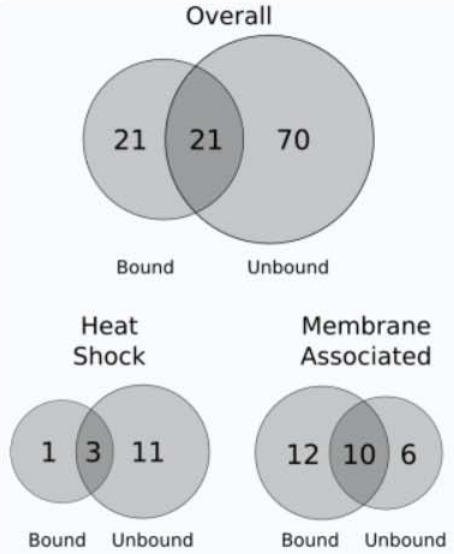
Go to:

Cortical plasticity and motor relearning play a pivotal in functional following policization. There is a large region of the sensorimotor cortex (SMC) homunculus dedicated to the hand. Researchers are trying to understand the changes in SMC following injury, repair, and reconstruction.[5] Techniques include transcranial magnetic stimulation, electroencephalography, magnetoencephalography, functional magnetic resonance imaging (MRI), structural MRI, and positron emission tomography.[5-9] Human cortical plasticity is a complex process that involves the unveiling of previously ineffective connections and sprouting of intact afferents from nearby cortical and/or subcortical territories.

Giraux et al.[10] have demonstrated that after hand transplantation, the original SMC map for hand activation is restored. The transplantation reverses the SMC loss following the initial hand amputation. Similarly, successful toe transfer produces temporal activation within the SMC cortex consistent with cortical plasticity.[11] Functional MRI has demonstrated that a patient learning to use their toe transfer lead to an expansion in their motor cortical representation. Practice magnifies the changes within the SMC cortex. As the new motor skill is mastered, there is a subsequent decrease in the amount of cortical representation.[5,11] Functional MRI studies have provided evidence that that motor reorganization continues to evolve over time and may be modified by training and experience for a protracted time.[12] These findings suggest that prolonged therapy and training may be necessary to maximize cortical reorganization and functional outcome.

The effects of policization have yet to be studied with reference to cortical plasticity. The locale and quantity of homunculus thumb representation before and after policization is an intriguing question. Without a[illegible] functional changes occur in the SMC cortex as the

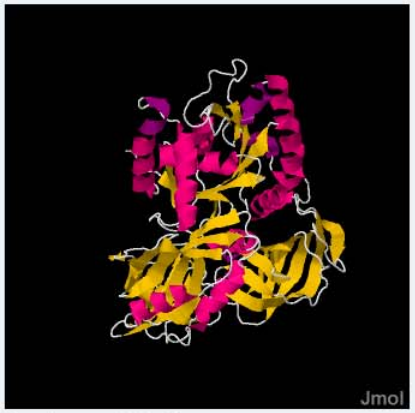




Membrane Associated - Bound Unique

76152537
56753245
78190783
56753957
56758274
56755685
76155174
15824396
29840937
59859873
14285348
12963455

Fig. 4: Overview of protein identifications from NCBInr Mascot database searches. (A) The proportion of total protein identifications belonging to the assigned subcellular locations for biotinylated (bound) and non-biotinylated (unbound) fractions. (B) Venn diagrams showing protein identifications for the biotinylated (bound) and non-biotinylated (unbound) fractions. Overall 23 protein identifications were made in both the bound and unbound fractions. Heat shock proteins were particularly abundant in the unbound fraction, however only four were identified in the bound fraction, one of which was



논문의 다양한 Supplemental Materials (보조 자료) 와 급격한 증가 현상

article of the future

Elsevier logo

Experience it here

take the survey

Feedback welcome

follow us on twitter

@ElsevierAOTF

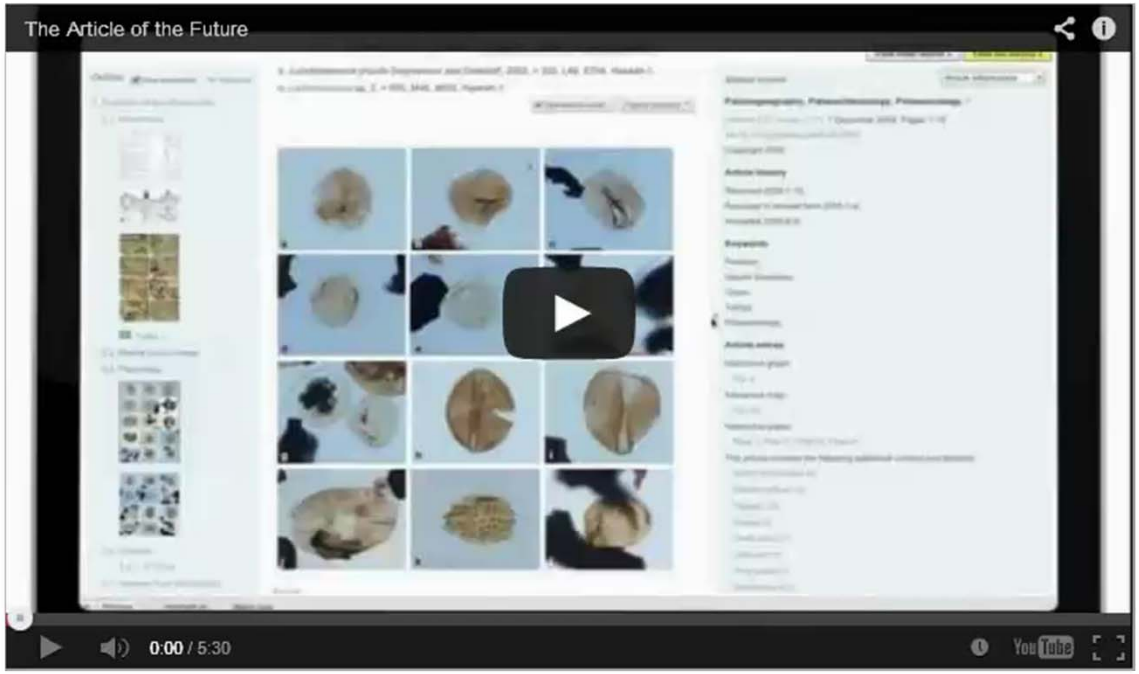
Sign up for alerts

The Article of the Future is now live! Have you experienced it?

Resulting from the Article of the Future project innovations, we are now able to announce the SciVerse ScienceDirect redesigned article page, with a new layout including a navigational pane and an optimized reading middle pane.

The Article of the Future project- an ongoing initiative aiming to revolutionize the traditional format of the academic paper in regard to three key elements: presentation, content and context.

Learn what we are doing and why by viewing the video below.



Last year, we introduced you to the Article of the Future project along with prototypes in 7 scientific areas. To achieve this evolution of the traditional research article, a three-pane article view has been proposed, which separates navigation (left pane) and value-added enhancements (right pane) from the core article (middle pane). Find out more in our **About section**.

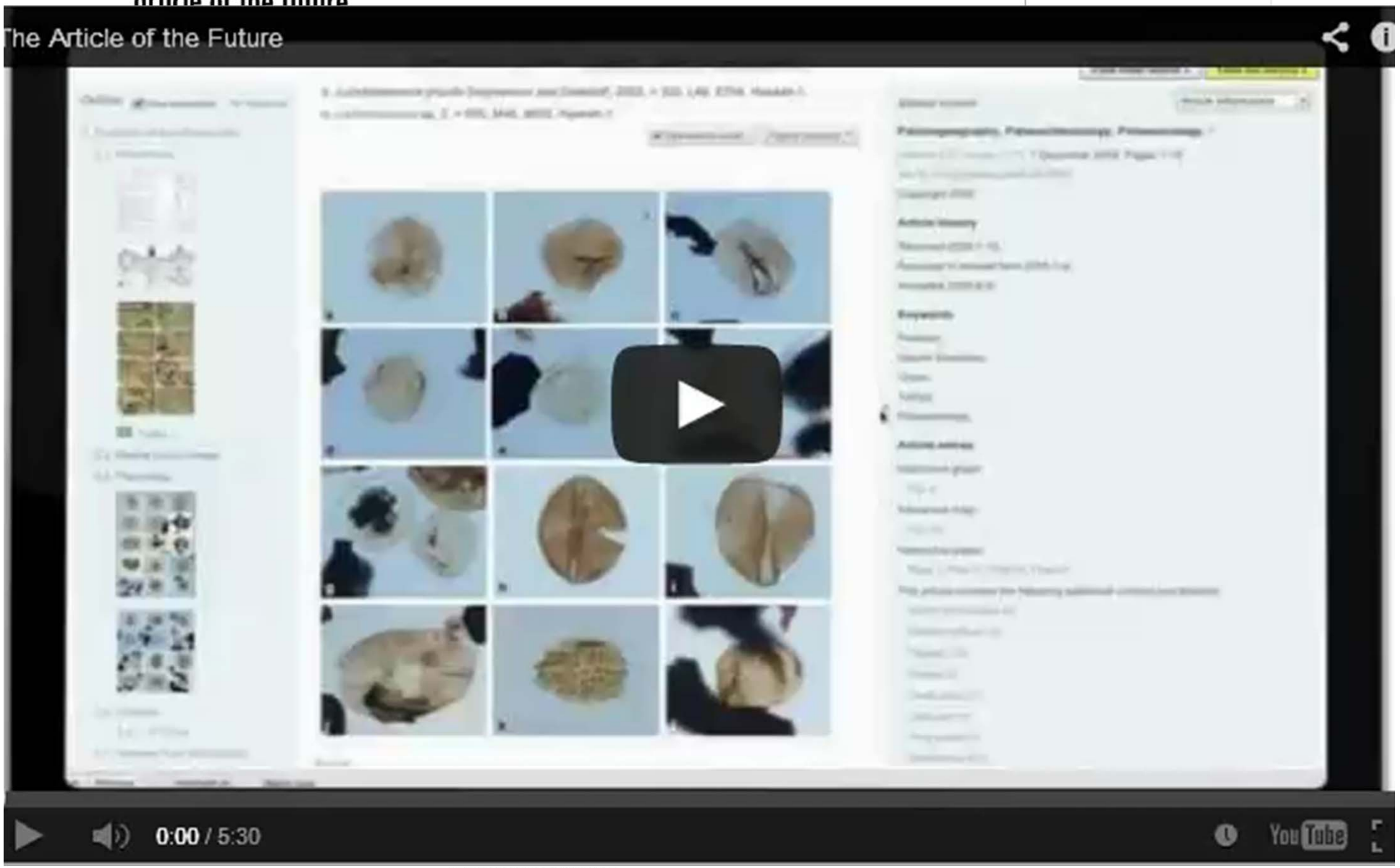
LATEST RELEASE

The Article of the Future project has realized another milestone with this implementation across all full text articles in SciVerse ScienceDirect.

The middle pane features the full text with interactive applications like Google Maps in addition to static map images. The left pane displays a table of contents for easy navigation, with clickable section headers and thumbnails of images

article of the future

Elsevier logo



LATEST RELEASE

The Article of the Future project has realized another milestone with this implementation across all full text articles in SciVerse ScienceDirect.

The middle pane features the full text with interactive applications like Google Maps in addition to static map images. The left pane displays a table of contents for easy navigation, with clickable section headers and thumbnails of images

Cell

Volume 154, Issue 5, 29 August 2013, Pages 1127–1139

Article

S. cerevisiae Chromosomes Biorient via Gradual Resolution of Syntely between S Phase and Anaphase

Eugenio Marco[1, 2, 4, 6], Jonas F. Dorn[3, 4], Pei-hsin Hsu[1], Khuloud Jaqaman[2, 6], Peter K. Sorger[2], Gaudenz Danuser[1,]

[1] Department of Cell Biology, Harvard Medical School, Boston, MA 02115, USA

[2] Department of Systems Biology, Harvard Medical School, Boston, MA 02115, USA

[3] Institute for Research in Immunology and Cancer, University of Montreal, Montreal QC H3C 3J7, Canada

Referred to by Jason R. Swedlow

At the (Kineto)chore, Yeast Really Are Like People

Cell, Volume 154, Issue 5, 29 August 2013, Pages 959-961

PDF (191 K)

Highlights

- *S. cerevisiae* chromosomes biorient in a stochastic process until anaphase onset
- Microtubule length control discriminates bioriented from syntelic attachments
- Bilobed kinetochore distribution is not synonymous with biorientation

Summary

Following DNA replication, eukaryotic cells must biorient all sister chromatids prior to cohesion cleavage at anaphase. In animal cells, sister chromatids gradually biorient during prometaphase, but current models of mitosis in *S. cerevisiae* assume that biorientation is established shortly after S phase. This assumption is based on the observation of a bilobed distribution of yeast kinetochores early in mitosis and suggests fundamental differences between yeast mitosis and mitosis in animal cells. By applying super-resolution imaging methods, we show that yeast and animal cells share the key property of gradual and stochastic chromosome biorientation. The characteristic bilobed distribution of yeast kinetochores, hitherto considered synonymous for biorientation, arises from kinetochores in mixed attachment states to microtubules, the length of which discriminates bioriented from syntelic attachments. Our results offer a revised view of mitotic progression in *S. cerevisiae* that augments the relevance of mechanistic information obtained in this powerful genetic system for mammalian mitosis.

Graphical Abstract

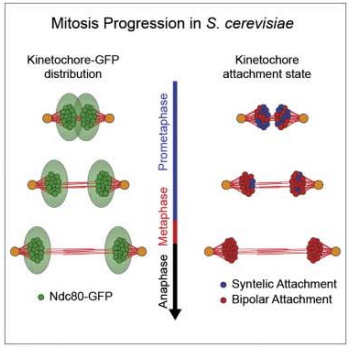


Figure options

http://dx.doi.org/10.1016/j.cell.2013.08.008

CrossMark

Get rights and content

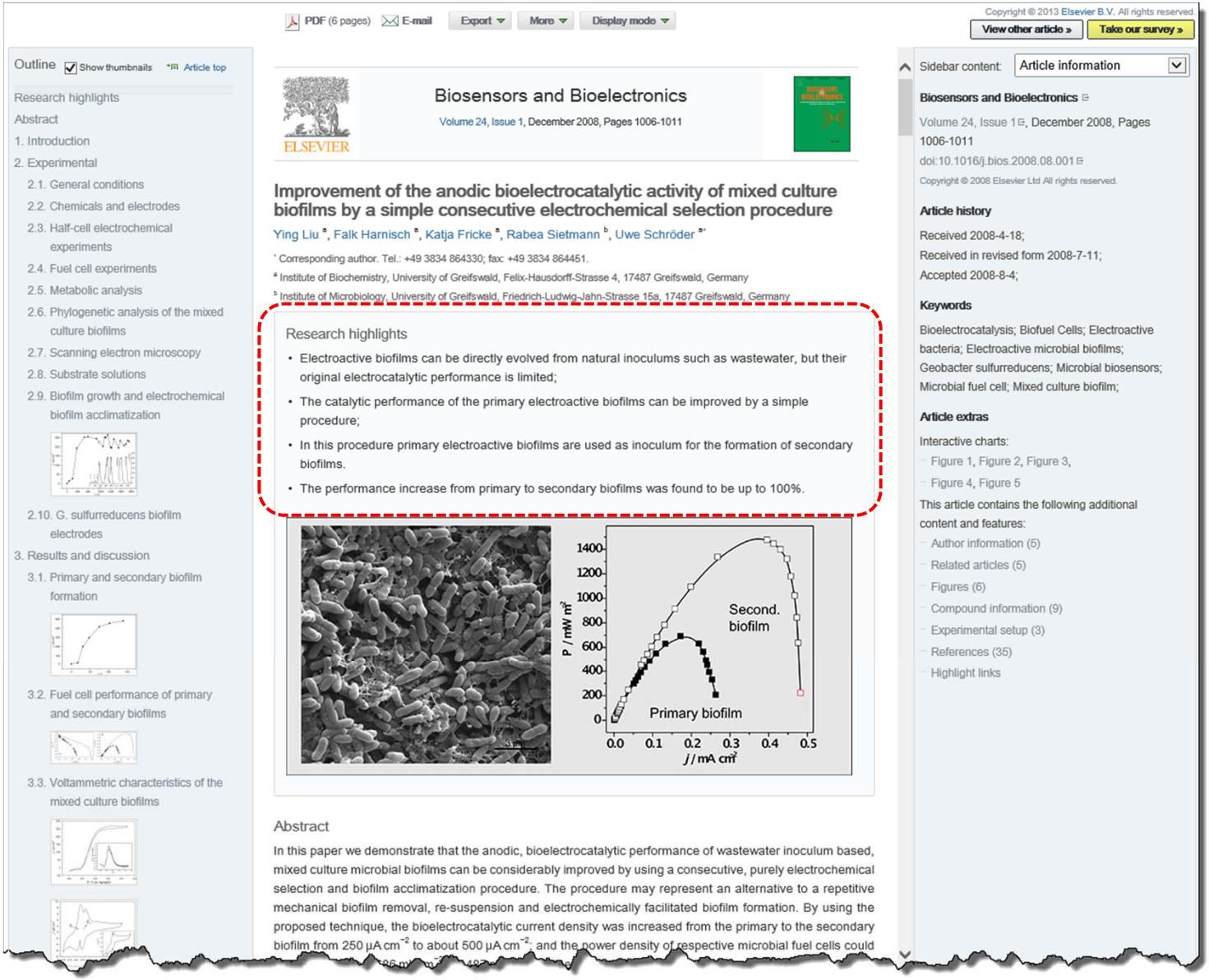
Movie S2. Two Examples of WT Cells—Back to Back—with Separated Tags in CEN-IV-Tracking Assay, Related to Figure 1. XY- (upper left), YZ- (upper right), and XZ- (lower left) intensity projections of CEN IV and SPB tags overlaid by computer-tracked locations (circles). Asterisks indicate interpolated positions of untracked tags. Time is shown in minutes. Anaphase onset in the second cell is marked by rapid divergence of SPB tags after 1 min. Note that, after anaphase onset, the automated tracking mostly fails because the spots are close to the border of the imaging volume.

View in article

Download video (19528 K)

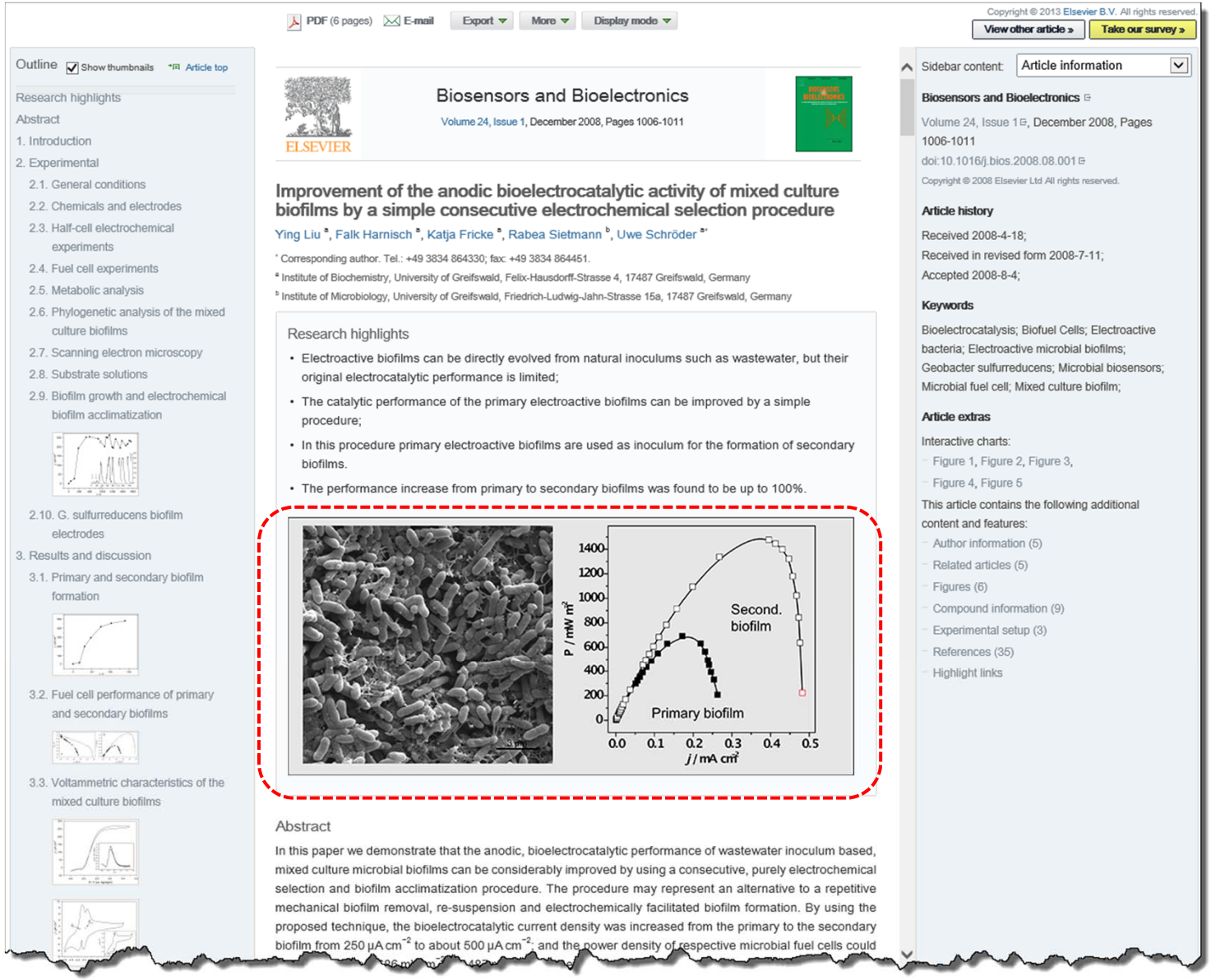
Research Highlights

Research Highlights consist of a short collection of bullet points that convey the core findings of the article.

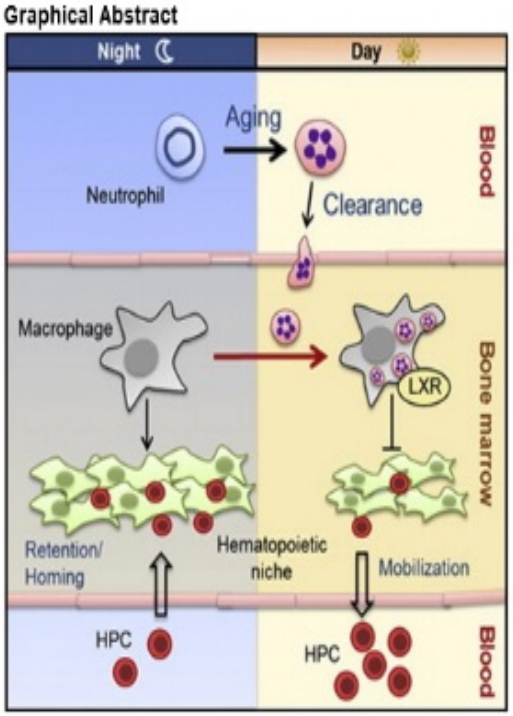


Graphical Abstracts

A Graphical Abstract summarizes the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership online.



Multimedia Abstracts



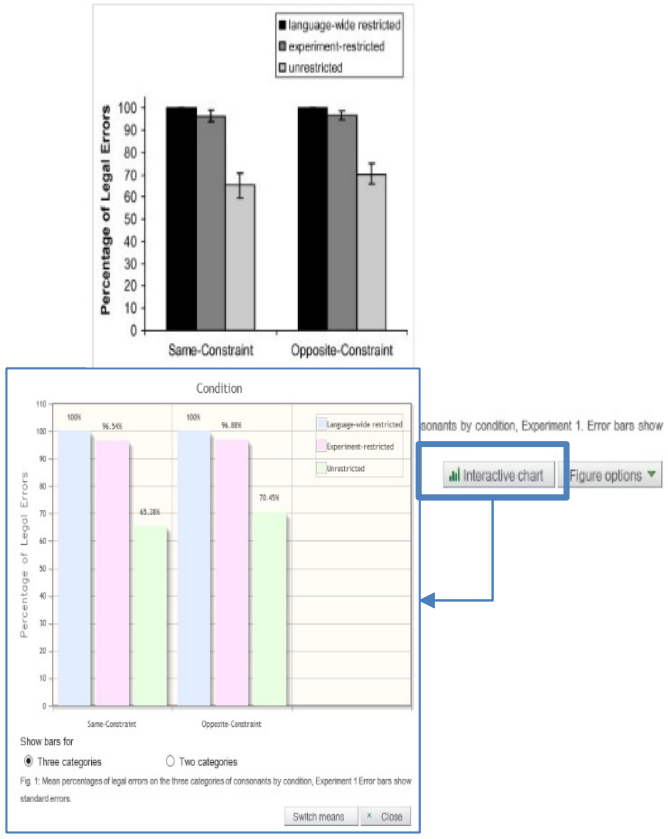
Graphical Abstract

Video Abstract

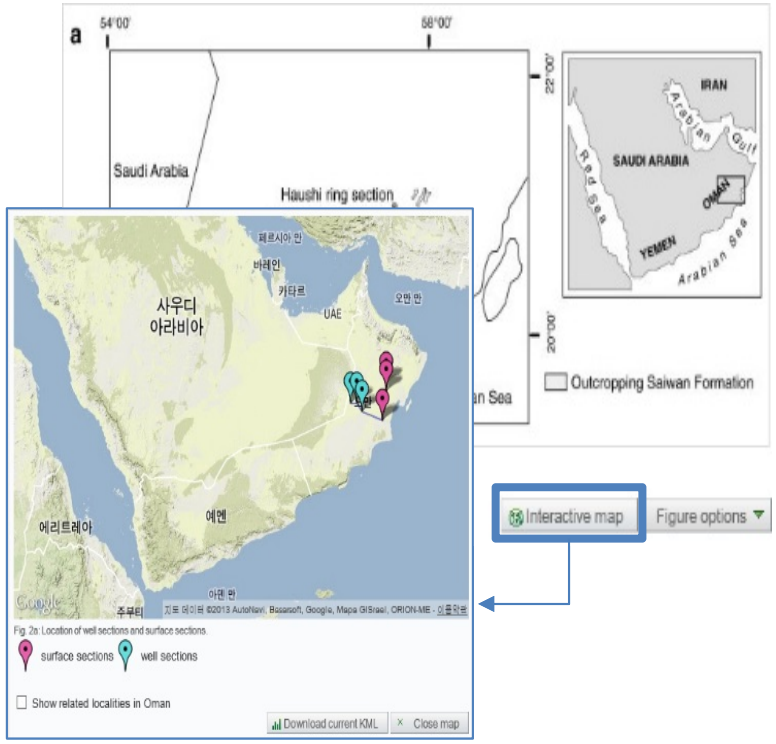
Audio Abstract

Source: www.sciencedirect.com

Interactive materials



Interactive Chart



Interactive Map

www.sciencedirect.com

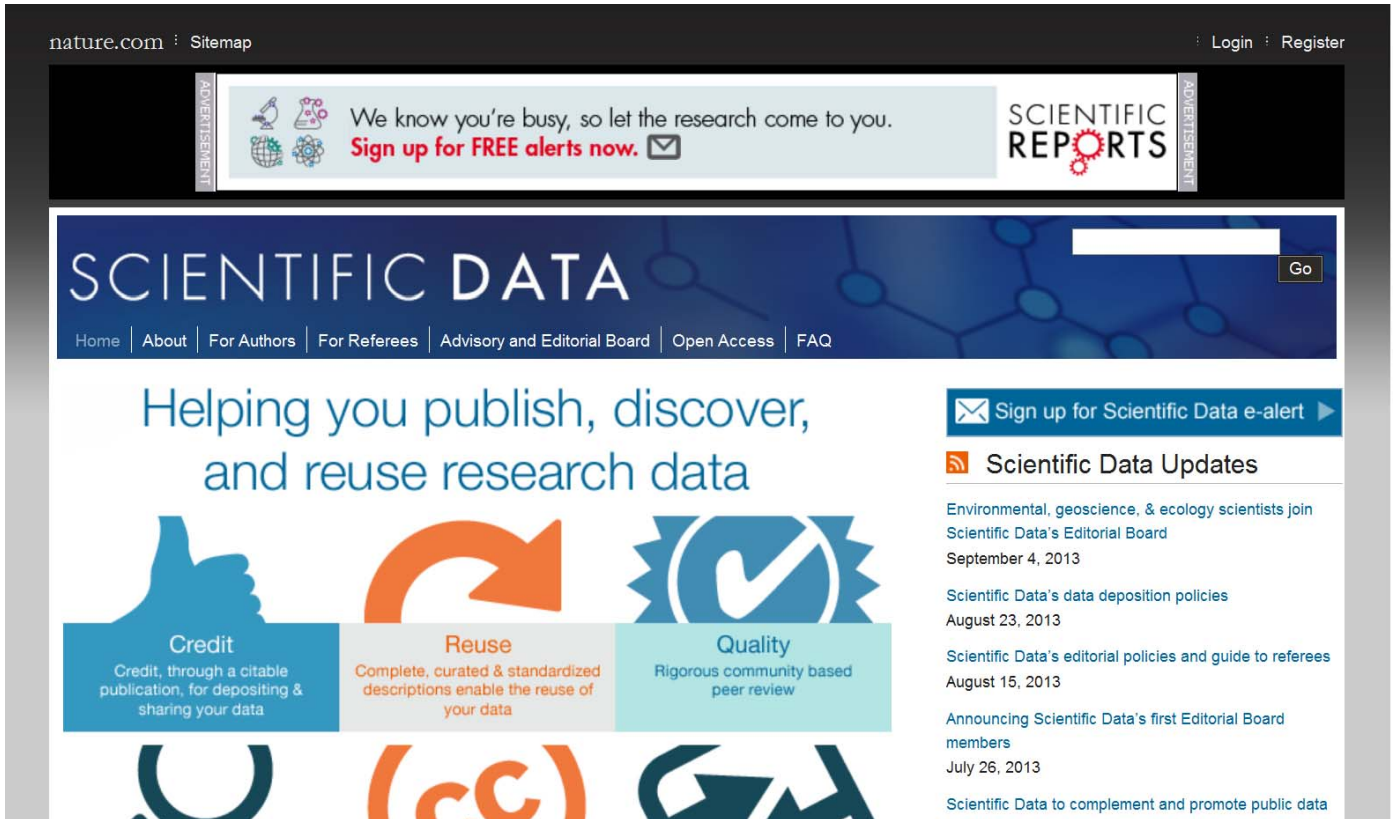
Video Chat
with authors and readers

Science Magazine Live Chat

Journal of Visualized Experiments (JoVE)
Indexed in PubMed

Nature Scientific Data

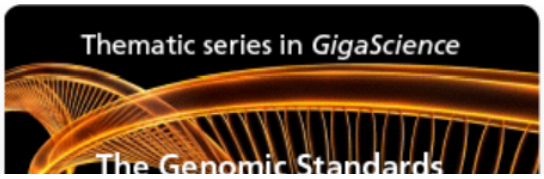
GigaScience
Indexed in PubMed



Scientific Data is a new open-access, online-only publication for descriptions of scientifically valuable datasets. It introduces a new type of content called the Data Descriptor, which will combine traditional narrative content with curated, structured descriptions of research data, including detailed methods and technical analyses supporting data quality. *Scientific Data* will initially focus on the life, biomedical and environmental science communities, but will be open to content from a wide range of scientific disciplines. Publications will be complementary to both traditional research journals and data repositories, and will be designed to foster data sharing and reuse, and ultimately to accelerate scientific discovery.

Scientific Data will launch in Spring 2014 and be open for submissions in Autumn 2013. Sign up for our e-mail alerts or follow us to stay informed.

GigaScience aims to revolutionize data dissemination, organization, understanding, and use. An online open-access open-data journal, we publish 'big-data' studies from the entire spectrum of life and biomedical sciences. To achieve our goals, the journal has a novel publication format: one that links standard manuscript publication with an extensive database that hosts all



GigaScience aims to revolutionize data dissemination, organization, understanding, and use. An online open-access open-data journal, we publish 'big-data' studies from the entire spectrum of life and biomedical sciences. To achieve our goals, the journal has a novel publication format: one that links standard manuscript publication with an extensive database that hosts all associated data and provides data analysis tools and cloud-computing resources.

Our scope covers not just 'omic' type data and the fields of high-throughput biology currently serviced by large public repositories, but also the growing range of more difficult-to-access data, such as imaging, neuroscience, ecology, cohort data, systems biology and other new types of large-scale sharable data.

and coordinated by the EBI, the open source MetaboLights

international partnerships. Now the worlds

Research

Open Access

Resources for methylome analysis suitable for gene knockout studies of potential epigenome modifiers

Research

Open Access

Resources for methylome analysis suitable for gene knockout studies of potential epigenome modifiers

1 * 1 1 2 1

Author Affiliations

1 Medical Genomics, UCL Cancer Institute, University College London, London, UK

2 Institute of Biochemistry and Genetics, Department of Biomedicine, University of Basel, Basel, Switzerland

3 Department of Medical and Molecular Genetics, King's College London, London, UK

For all author emails, please log on.

2 Institute of Biochemistry and Genetics, Department of Biomedicine, University of Basel, Basel, Switzerland

3 Department of Medical and Molecular Genetics, King's College London, London, UK

For all author emails, please log on.

The electronic version of this article is the complete one and can be found online at: http://www.gigasciencejournal.com/content/1/1/3

Received: 26 March 2012
Accepted: 12 July 2012
Published: 12 July 2012

Abstract

Background

Methylated DNA immunoprecipitation (MeDIP) is a popular enrichment based method and can be combined with sequencing (termed MeDIP-seq) to interrogate the methylation status of cytosines across entire genomes. However, quality control and analysis of MeDIP-seq data have remained to be a challenge.

changes is subject of on-going studies.

Methods

Samples

The *Tdg* KO strategy, cell culture conditions and in-vitro differentiation procedure used to generate the 18 wt and mutant samples analysed here were as described in Cortázar *et al.* (2011) [13].

MeDIP-seq

5 μg of DNA from each sample was sonicated to between 50 and 350 bp. Sonicated DNA was then subjected to Illumina's paired-end library preparation and MeDIP enrichment was performed as described previously [12]. Next generation sequencing (37 bp paired-end reads) was performed on the libraries (size-selected to be between 150 and 200 bp) using an Illumina GAIIx for each sample.

Data analysis

The generated MeDIP-seq data were analysed using our computational pipeline MeDUSA, which constitutes several discrete stages of analysis and is publicly available from our homepage [18] and via *GigaScience*[19]).

Sequence alignment, filtering and quality control

Paired end alignment against the mouse genome (Build NCBIM37) was performed using BWA (v0.5.8) [20] with default settings. Initial filtering to remov
pair was performed using SAMtools (v0.1.9) [30]. Further
read scored an alignment score > =10. Additionally, for ea
aligned to the exact same start and stop position on the s
discarded. The filtered paired reads were written to file in b

regions and base pair overlap determined. Expected base pair coverage was calculated from total DMR, total LMR and genomic base pair counts. Observed/Expected ratios were determined. Random genomic regions (500 bp, n = 1,000-15,000) were analysed in a similar manner. 1,000 permutations of the random data were performed; from this an empirical *p*-value could be calculated.

Availability of supporting data

The dataset supporting the results of this article is available in the Gene Expression Omnibus repository, GSE27468, and the *GigaScience* database [19].

Competing interests

The authors declare that they have no competing interests.

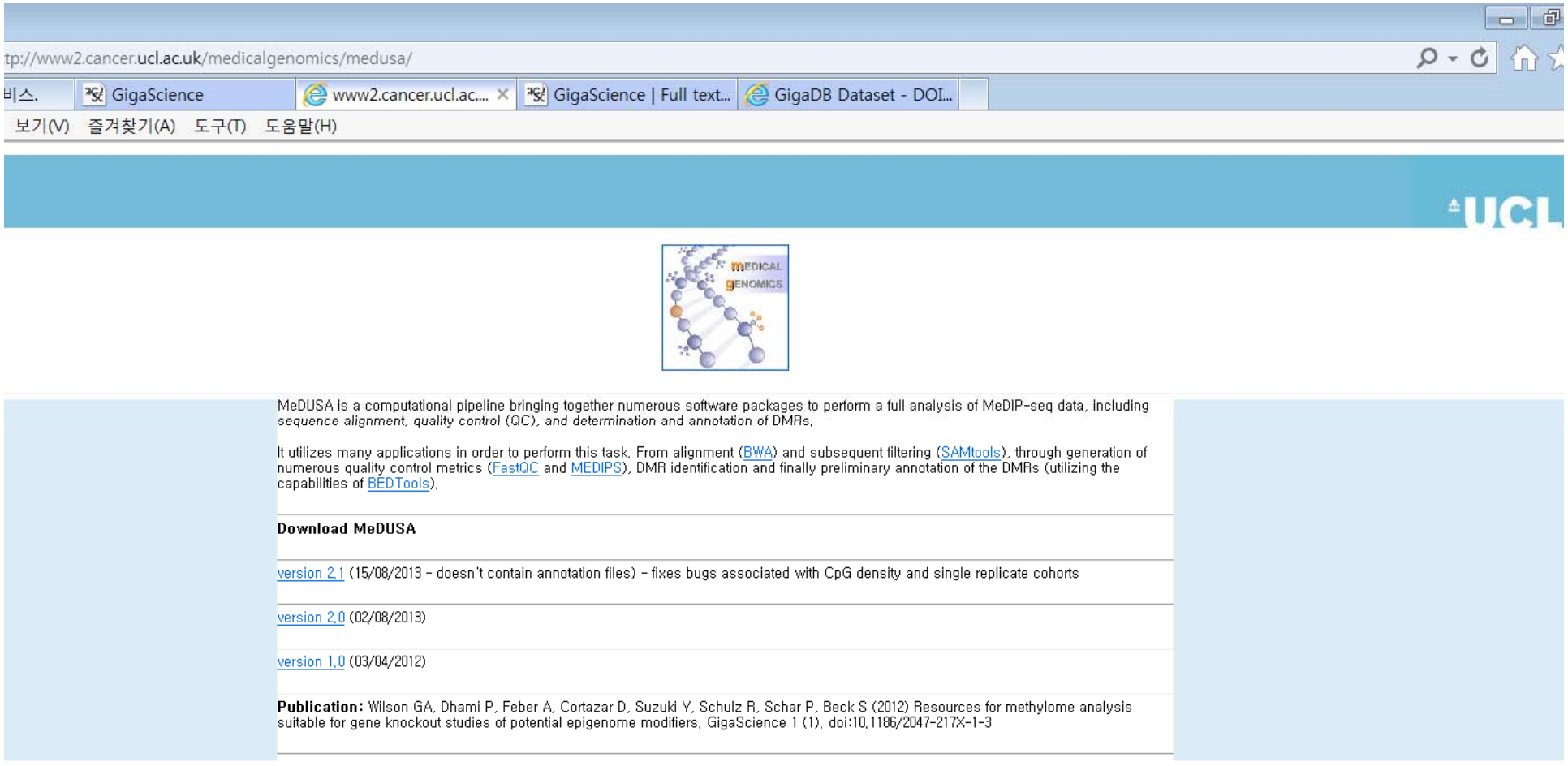
Authors' contributions

GAW and SB conceived and designed the analyses. PD, AF and YS performed experimental work. GAW analysed the data. GAW, DC, RS and PS contributed reagents, materials or analysis tools. GAW and SB wrote the paper. All authors read and approved the final manuscript.

18. *MeDUSA homepage .*

http://www2.cancer.ucl.ac.uk/medicalgenomics/medusa *webcite*

Return to text



19. Wilson G, Dharmi P, Saito Y, Cortázar D, Kunz C, Schär P, Beck S: **Resources for the MeDUSA (Methylated DNA Utility for Sequence Analysis) MeDIP-seq computational analysis pipeline for the identifica associated methylome data from 1 cells.**

GigaScience 2012.

http://dx.doi.org/10.5524/100035

(GIGA)^n DB
Revolutionizing data dissemination, organization, and use

Home | About | Contact | Terms of use
Help | Login | Create account

Search

Data released on June 27, 2012

Data released on June 27, 2012

type and mutant mouse ES, NP and MEF cells.

Wilson, G; Dharmi, P; Saito, Y; Cortazar, D; Kunz, C; Schär, P; Beck, S (2012): Resources for the MeDUSA (Methylated DNA Utility for Sequence Analysis) MeDIP-seq computational analysis pipeline for the identification of differentially methylated regions, and associated methylome data from 18 wild-type and mutant mouse ES, NP and MEF cells. GigaScience. http://dx.doi.org/10.5524/100035

Here we present 18 genome-wide DNA methylation profiles of wild type and Thymine DNA glycosylase (*Tdg*) knockout cells, which serve as an excellent murine methylome resource. The 18 samples represent 6 biological cohorts: 6 samples were derived from mouse embryonic stem cells (3 *Tdg+/-*, 3 *Tdg-/-*), 6 samples were from mouse neural precursor cells (3 *Tdg+/-*, 3

wild-type and mutant mouse ES, NP and MEF cells. GigaScience. http://dx.doi.org/10.5524/100035

Here we present 18 genome-wide DNA methylation profiles of wild type and Thymine DNA glycosylase (*Tdg*) knockout cells, which serve as an excellent murine methylome resource. The 18 samples represent 6 biological cohorts: 6 samples were derived from mouse embryonic stem cells (3 *Tdg+/-*, 3 *Tdg-/-*), 6 samples were from mouse neural precursor cells (3 *Tdg+/-*, 3

combination of MEDIPS and custom R scripts. In addition to the total alignment wig track, strand specific wig tracks were also generated, enabling the user to infer whether the MeDIP signal is derived by methylation on the forward and/or reverse strand. The MeDIP-seq data were processed using the analysis pipeline MeDUSA (Methylated DNA Utility for Sequence Analysis). MeDUSA brings together numerous software packages to perform a full analysis of MeDIP-seq data, including sequence alignment, quality control, and determination and annotation of differentially methylated regions.

Related manuscripts:
doi:10.1186/2047-217X-1-3 (PubMed: 23587164)

Additional information:
http://projects.ensembl.org/heroic/

Related manuscripts:
doi:10.1186/2047-217X-1-3 (PubMed: 23587164)

Additional information:
http://projects.ensembl.org/heroic/

SRA: SRP005934
BioProject: PRJNA138437

Projects:
HEROIC

Samples:

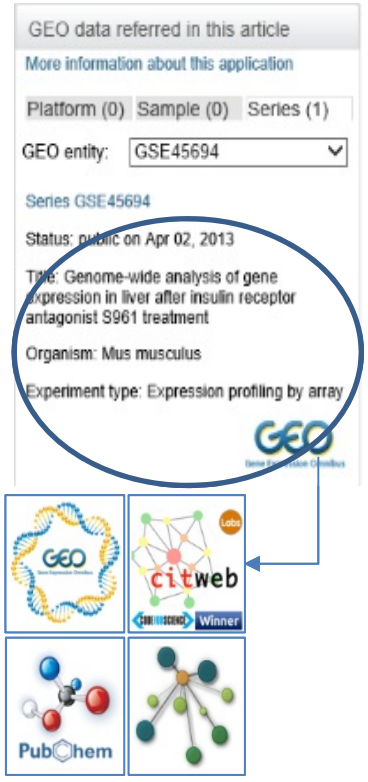
Sample ID	Taxonomic ID	Common name	Genbank name	Scientific name	Sample attributes

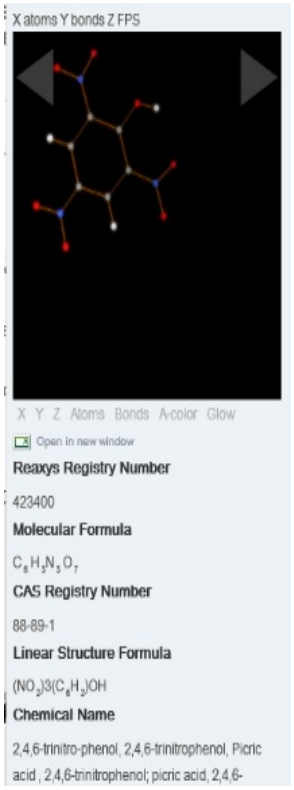
HEROIC

Samples:

Sample ID	Taxonomic ID	Common name	Genbank name	Scientific name	Sample attributes
					cell-type="embryonic stem cells" genetic background="129 C57BL/6 mixed" genotype="TDG knockout" insert size standard deviation="32.02" mean insert size="95.65" medip antibody="5-Methylcytosine" description="source: Mouse embryonic stem cells"
SRS173544	10090	Mouse	house mouse	Mus musculus	GEO Accession="GSM678689"

Semantic, Ontology, API 등 활용 → 고급 관련 정보 제공 및 연결





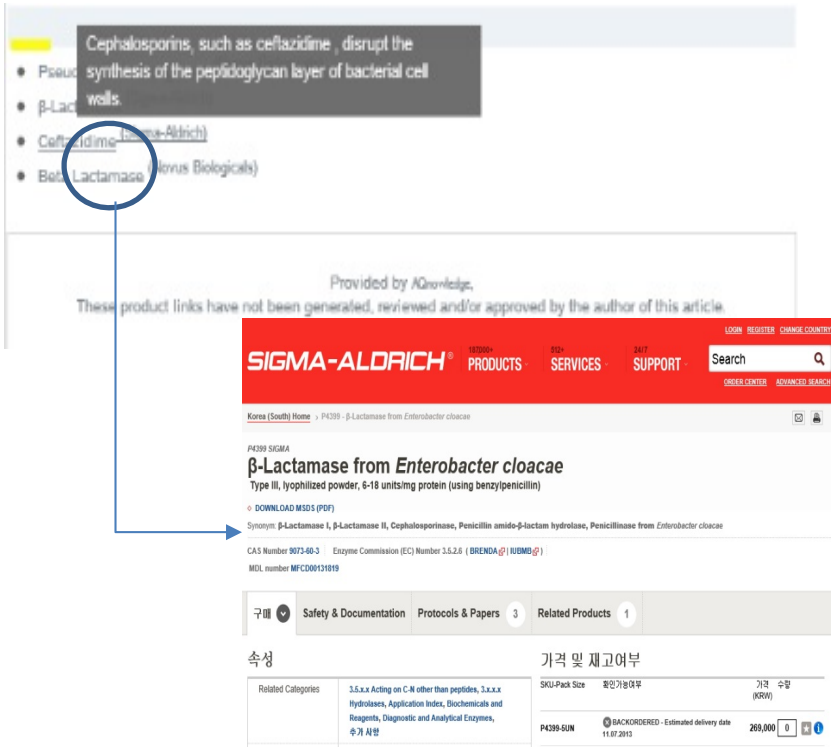


TABLE 4. File types commonly observed among the 100 SDRs sampled, particularly for export purposes.

File type category	File type/extension
Archives	.zip, .tar, .tar.gz, stuffit (binhex)
Statistical analysis	R, SPSS, SAS, STATA
GIS	many SDRs indicated using GIS related files including raster formats like .bil, ESRI map file formats like .e00, and vector formats like .shp
Extensible markup	.xml, .sgl, .eml (ecological metadata language), VOTable (Virtual Observatory Table)
Flat file	.txt, .ascii, .csv
Image	.tiff, .jpg, .gif, .pic, .fits and .png
Movie/multimedia	.wav, .swf, .mpg, .mov, .mp3, .mp4, .avi, quicktime and anis (Flash animations applet)
Word processor	.pdf, .ps, .doc
Spreadsheet	.xls
Presentation	.ppt
Proprietary or specific tools:	
Geosciences	Open Geospatial Consortium's Web Map Service (WMS) map and legend images, Web Feature Service (WFS) vector source data in GML format, Web Coverage Service (WCS) raster source data in GeoTIFF format NetCDF (common data format, http://www.unidata.ucar.edu/software/netcdf/docs/faq.html) and .grib (gridded binary)
(Medicine) bioinformatics	GO, FASTA, Contig
Web page	.html

다양한 Supplemental materials 파일 형식

Marcial LH and Hemminger BM. Scientific data repositories on the Web: An initial survey. JASIST, 61(2010): 2029–2048.

Supplemental Materials의 급증

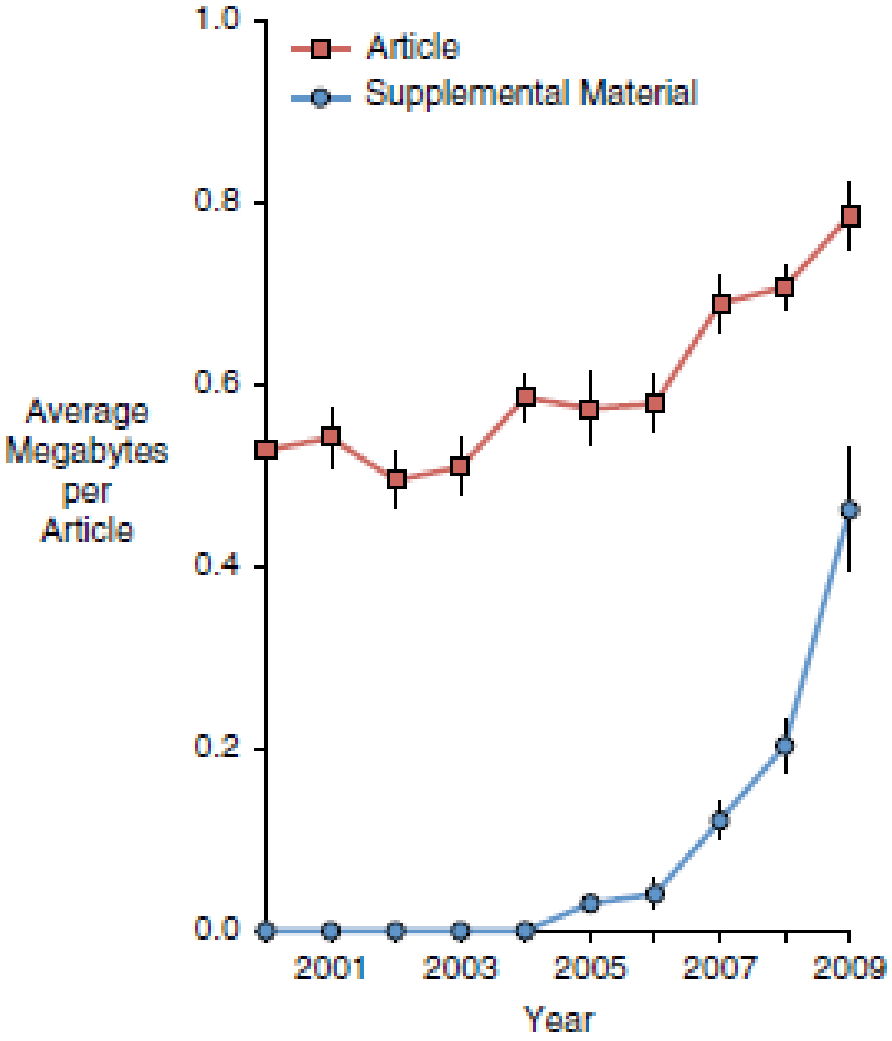


Figure 1. Average size of a *Journal of Neuroscience* article and supplemental material in megabytes. Values are trimmed means (5th–95th percentile) to exclude a handful of unaccountably large articles and supplemental files. Supplemental movies are excluded to facilitate comparisons because a megabyte of a movie is arguably easier to evaluate than a megabyte of text, figures, or tables. Data include only articles published in January of each year. Error bars are standard errors of the trimmed means.

Journal of Neuroscience Announcement Regarding Supplemental Material. J Neurosci 30(32):10599 –10600. August 11, 2010. Data include only articles published in January of each year.

The Journal of Neuroscience, August 11, 2010 • 30(32):10599–10600 • 10599

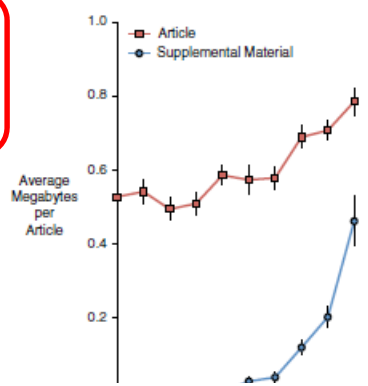
Editorial

Announcement Regarding Supplemental Material

Beginning November 1, 2010, *The Journal of Neuroscience* will no longer allow authors to include supplemental material when they submit new manuscripts and will no longer host supplemental material on its web site for those articles. When articles are published, authors will be allowed to include a footnote with a URL that points to supplemental material on a site they support and maintain, together with a brief description of what the supplemental material includes, but that supplemental material will not be reviewed or hosted by *The Journal*.

We recognize that this is a major change that will set *The Journal* apart from most neuroscience journals, but the Society for Neuroscience Council has approved this step because supplemental material has begun to undermine the peer review process in important ways. We believe that the changes described here are our best option for protecting peer review and maintaining our leadership in publishing articles of the greatest significance and highest quality. Because not all of the problems associated with supplemental material will be obvious to readers, we explain them here.

Online supplemental material initially seemed to bring only benefits. Making more information available is a good goal, and the financial costs of storing extra material electronically are



Beginning November 1, 2010, *The Journal of Neuroscience* will no longer allow authors to include supplemental material when they submit new manuscripts and will no longer host supplemental material on its web site for those articles. When articles are published, authors will be allowed to include a footnote with a URL that points to supplemental material on a site they support and maintain, together with a brief description of what the supplemental material includes, but that supplemental material will not be reviewed or hosted by *The Journal*.

Supplemental Materials를 적극적으로 수용하기 위하여 필요한 조치

- 각 보조 자료 (object)를 식별할 수 있는 충분한 정보를 논문 본문에 표기

  (제목, 요약, 파일 형식, meta data, DOI 등)
- 투고규정에 명시
- E-Journal platform에서 이용 가능하도록 user friendly interface 구현

  (다양한 링크, interactive multimedia, 보조 자료 검색 기능)

- 충분한 식별 정보 논문에 표기
  (제목, 요약, 파일 형식, meta data, DOI 등)
- 투고규정에 명시
- E-Journal platform에 uwer-friendly interface 구현
  (다양한 링크, interactive multimedia, 보조 자료 검색 기능)

IMAGE OF INTEREST

Korean J Intern Med 2013;28:631
http://dx.doi.org/10.3904/kjim.2013.28.5.631

KJIM

Pocket flashlight-elicited Quincke pulse for aortic dissection diagnosis

Atsushi Mizuno and Koichiro Niwa

Department of Cardiology, Cardiovascular Center, St. Luke's International Hospital, Tokyo, Japan

Received: May 5, 2013
Revised : May 13, 2013
Accepted: May 29, 2013

Correspondence to
Atsushi Mizuno, M.D.
Tel: +81-3-3541-5151
Fax: +81-3-3544-0649
E-mail: atmizu@luke.or.jp

A 62-year-old man, without a medical history of cardiovascular disease, was transferred to our hospital due to sudden-onset chest pain. His blood pressure was 101/21 mmHg, and heart rate was 87 beats per minute. A physical examination revealed a diastolic murmur, but we could not find an obvious Quincke pulse, only by nail bed pressure. However, applying Quincke's pocket flashlight method revealed momentary accentuation of reddening of the nail bed and fingertips of the left hand (Fig. 1 and Supplementary Video 1 [available online at http://www.kjim.org/]). We suspected aortic regurgitation associated with an aortic dissection, which was confirmed by trans-thoracic echocardiography and contrast-enhanced computed tomography. Therefore, we performed an emergency operation, and his clinical course was good.

Aortic regurgitation is one of the most common causes of death in patients with an aortic dissection. However, the sensitivity of auscultation for detecting a diastolic murmur is very low. Therefore, at our institution, we have added several other physical signs and imaging modalities to diagnose aortic regurgitation in clinical practice. The Quincke pulse is a famous physical sign, but it is also difficult to define without a microscope and microcapillary tonometer. To address this problem, introduced the pocket flashlight method, whereby a light source is used to illuminate the fingers. We diagnosed aortic regurgitation based on a diastolic murmur and the Quincke pulse as determined using the pocket flashlight method. This method is a simple tool for diagnosing aortic regurgitation in patients with chest pain.

Conflict of interest

No potential conflict of interest relevant to this article is reported.

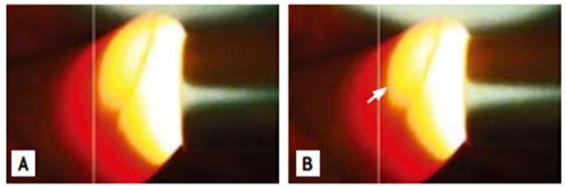


Figure 1. (A) Diastole; pocket flashlight illumination easily reveals pulsatile redness. (B) Systole; redness of nail bed moves slightly towards the fingertip. Capillary redness moves towards the right side of the figure during systole (white arrow shows movement of capillary redness towards the fingertips).

pISSN 1226-3303
eISSN 2005-6648
http://www.kjim.org

Image of Interest

Open Access

Korean J Intern Med. 2013 Sep;28(5):631-631. English.
Published online 2013 August 14. http://dx.doi.org/10.3904/kjim.2013.28.5.631

Pocket flashlight-elicited Quincke pulse for aortic dissection diagnosis

Atsushi Mizuno and Koichiro Niwa

Department of Cardiology, Cardiovascular Center, St. Luke's International Hospital, Tokyo, Japan.

Correspondence to Atsushi Mizuno, M.D. Tel: +81-3-3541-5151, Fax: +81-3-3544-0649, Email: atmizu@luke.or.jp

Received May 05, 2013; Revised May 13, 2013; Accepted May 29, 2013.

A 62-year-old man, without a medical history of cardiovascular disease, was transferred to our hospital due to sudden-onset chest pain. His blood pressure was 101/21 mmHg, and heart rate was 87 beats per minute. A physical examination revealed a diastolic murmur, but we could not find an obvious Quincke pulse, only by nail bed pressure. However, applying Quincke's pocket flashlight method revealed momentary accentuation of reddening of the nail bed and fingertips of the left hand (Fig. 1 and Supplementary Video 1 [available online at http://www.kjim.org/]). We suspected aortic regurgitation associated with an aortic dissection, which was confirmed by trans-thoracic echocardiography and contrast-enhanced computed tomography. Therefore, we performed an emergency operation, and his clinical course was good.

Aortic regurgitation is one of the most common causes of death in patients with an aortic dissection. However, the sensitivity of auscultation for detecting a diastolic murmur is very low. Therefore, at our institution, we have added several other physical signs and imaging modalities to diagnose aortic regurgitation in clinical practice. The Quincke pulse is a famous physical sign, but it is also difficult to define without a microscope and microcapillary tonometer. To address this problem, introduced the pocket flashlight method, whereby a light source is used to illuminate the fingers. We diagnosed aortic regurgitation based on a diastolic murmur and the Quincke pulse as determined using the pocket flashlight method. This method is a simple tool for diagnosing aortic regurgitation in patients with chest pain.

Figures

Go to:

Figure 1
(A) Diastole; pocket flashlight illumination easily reveals pulsatile redness. (B) Systole; redness of nail bed moves slightly towards the fingertip. Capillary redness moves towards the right side of the figure during systole (white arrow shows movement of capillary redness towards the fingertips).

Notes

Go to:

No potential conflict of interest relevant to this article is reported.

Supplementary Material

Go to:

Supplementary Video 1

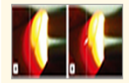
Click here to view. (271K, avi)

Formats:
Abstract
Article
PubReader
PDF
Figures + Tables
References
Supplementary Materials

Links to:
KoreaMed
the Journal

Export:
Download Citation
E-mail
Twitter
Facebook

Figures:



Show all...

Supplementary Materials:
Supplementary Video 1

Thumbnail Video
High Resolution Video (271K, avi)

Show all...

PubReader format: click here to try

Korean J Intern Med. 2013 September; 28(5): 631. PMCID: PMC3759775
Published online 2013 August 14. doi: 10.3904/kjim.2013.28.5.631

Pocket flashlight-elicited Quincke pulse for aortic dissection diagnosis

Atsushi Mizuno and Koichiro Niwa

Author information ▶ Article notes ▶ Copyright and License information ▶

A 62-year-old man, without a medical history of cardiovascular disease, was transferred to our hospital due to sudden-onset chest pain. His blood pressure was 101/21 mmHg, and heart rate was 87 beats per minute. A physical examination revealed a diastolic murmur, but we could not find an obvious Quincke pulse, only by nail bed pressure. However, applying Quincke's pocket f lashlight method revealed momentary accentuation of reddening of the nail bed and fingertips of the left hand (Fig. 1 and Supplementary Video 1 [available online at http://www.kjim.org/]). We suspected aortic regurgitation associated with an aortic dissection, which was conf irmed by trans-thoracic echocardiography and contrast-enhanced computed tomography. Therefore, we performed an emergency operation, and his clinical course was good.

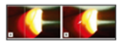


Figure 1
(A) Diastole; pocket flashlight illumination easily reveals pulsatile redness. (B) Systole; redness of nail bed moves slightly towards the fingertip. Capillary redness moves towards the right side of the figure during systole (white arrow shows movement ...

Aortic regurgitation is one of the most common causes of death in patients with an aortic dissection. However, the sensitivity of auscultation for detecting a diastolic murmur is very low. Therefore, at our institution, we have added several other physical signs and imaging modalities to diagnose aortic regurgitation in clinical practice. The Quincke pulse is a famous physical sign, but it is also difficult to define without a microscope and microcapillary tonometer. To address this problem, introduced the pocket f lashlight method, whereby a light source is used to illuminate the fingers. We diagnosed aortic regurgitation based on a diastolic murmur and the Quincke pulse as determined using the pocket flashlight method. This method is a simple tool for diagnosing aortic regurgitation in patients with chest pain.

Footnotes

Go to:

No potential conflict of interest relevant to this article is reported.

Supplementary Material

Go to:

Supplementary Video 1:

Click here to view. (272K, avi)

Formats:
Article | PubReader | ePub (beta) | PDF (63K)

Recent activity
Turn Off Clear
Pocket flashlight-elicited Quincke pulse for aortic dissection diagnosis PMC
Annals of Occupational and Environmental Medicine (106) PMC
See more...

Korean Journal of Urology
www.kjurology.org
Aims and Scope | Instructions to Authors | Online Submission

Journal List > Korean J Urol > v.54(5); May 2013

Original Article — Open Access

Korean J Urol. 2013 May;54(5):327-332. English.
Published online 2013 May 14. http://dx.doi.org/10.4111/kju.2013.54.5.327

Laparoendoscopic Single-Site Surgery With the Second-Generation Single Port Instrument Delivery Extended Reach Surgical System in a Porcine Model

Soo Dong Kim, Jaime Landman,[1] and Gyung Tak Sung

Department of Urology, Dong-A Medical Center, Busan, Korea.
[1]Department of Urology, University of California Irvine Medical Center, Irvine, CA, USA.

Corresponding Author: Gyung Tak Sung, Department of Urology, Dong-A Medical Center, 26 Daesingongwon-ro, Seo-gu, Busan 602-715, Korea. TEL: +82-51-240-2896, FAX: +82-51-254-5448, Email: sunggt@daunet.donga.ac.kr

Received February 25, 2013; Accepted April 18, 2013.

Abstract

Purpose

To describe our initial experience with the second-generation Single Port Instrument Delivery Extended Reach (SPIDER) laparoendoscopic single-site surgical system in a porcine model.

Materials and Methods

In four swine weighing approximately 32 to 35 kg, five nephrectomies, four adrenalectomies, three pyeloplasties, and three partial cystectomies and closures were performed by a single surgeon. The swine were placed in the lateral flank position under general anesthesia. The SPIDER surgical system was introduced through a single incision and the various urological procures were performed by use of flexible instrumentation.

Results

All five nephrectomies, four adrenalectomies, three pyeloplasties, and three partial cystectomies and closures were performed successfully without additional skin incisions. The mean time to set up the SPIDER platform was 3.5 minutes. The mean operative time for the right and left nephrectomies was 45.4 minutes and 47.8 minutes, respectively. The mean operative time for the right and left adrenalectomies was 37.6 minutes and 35.4 minutes, respectively. The mean operative time for the pyeloplasties for one right and two left ureters was 45.6 minutes and 47.3 minutes, respectively. The mean operative time for the partial cystectomies and closures was 18.6 minutes. There were no noticeable intraoperative complications except for minimal urine leakage in the first pyeloplasty.

Conclusions

In this initial pilot evaluation, the second-generation SPIDER surgical system offered intuitive instrument maneuverability and restored triangulation. However, retraction was challenging because of the lack of strength and the limited ability for precise manipulation of the tip. Future refinements of the technology and prospective studies are needed to optimize the application of this technology in urology.

Keywords: Laparoscopy, Robotics, Urologic surgical procedures

FIG. 2
Basic operative setup of the Single Port Instrument Delivery Extended Reach (SPIDER) surgical system. The surgical system is inserted through the right lower quadrant of the swine and faces the target area. The SPIDER platform is locked in position by using the docking ball. The swine is in the left lateral position.

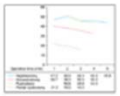


FIG. 3
Operative time depending on the surgery. 1,3,5: right side; 2,4: left side.

Notes

The authors have nothing to disclose.

SUPPLEMENTARY MATERIALS

An accompanying video can be found in the 'Urology in Motion' section of the journal homepage (www.kjurology.org). The supplementary data can also be accessed by scanning a QR code located on the title page of this article.

Click here to view (21M, wmv)

References

1. Gettman MT, Lotan Y, Napper CA, Cadeddu JA. Transvaginal laparoscopic nephrectomy: development and feasibility in the porcine model. Urology 2002;59:446–450.

SPIDER system. The authors showed true triangulation and simple retraction are achieved without added operative time or the need to tolerate uncomfortable techniques that may lead to frustration of the surgeons. In addition, low morbidity, faster recovery, and improved cosmesis are other appealing advantages of the SPIDER system. We have also demonstrated in this study that various urological procedures can be performed effectively in a reasonable operative time with minimal complications by use of the SPIDER surgical system.

In terms of technical aspects, many of the mechanical advantages of the surgical system were apparent: triangulation to obtain a critical operative view, ergonomic handling of the instrument tips, and operation through a true single port. The reduced length of the articulating IDITs and the vertebral design provide the width of two flexible instrument tips in an optimal position with increased forces at the distal instrument tips, thereby facilitating an optimal working environment. Prior laparoscopic experience of the surgeon represented an important variable in the operative procedures. The operating surgeon had only 20 to 30 minutes of device introduction and manipulation and proceeded to perform the surgical procedures on the basis of the protocol. Surgeons with advanced laparoscopic skills dling, and critical work reviews. The drawbacks of second-generation SPIDER surgical system require further improvement in design and modification to optimize its clinical application in urology.

CONCLUSIONS

In this initial pilot evaluation, we have demonstrated that the second-generation SPIDER surgical system offered intuitive instrument maneuverability, restored triangulation without external instrument clashing, and provided critical intraoperative views. However, retraction was challenging because of the lack of strength and lack of precise manipulation of the tip when the instruments were fully deployed. Future refinements of the technology and prospective studies are needed to further optimize the application of this surgical system in urology.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

SUPPLEMENTARY MATERIALS

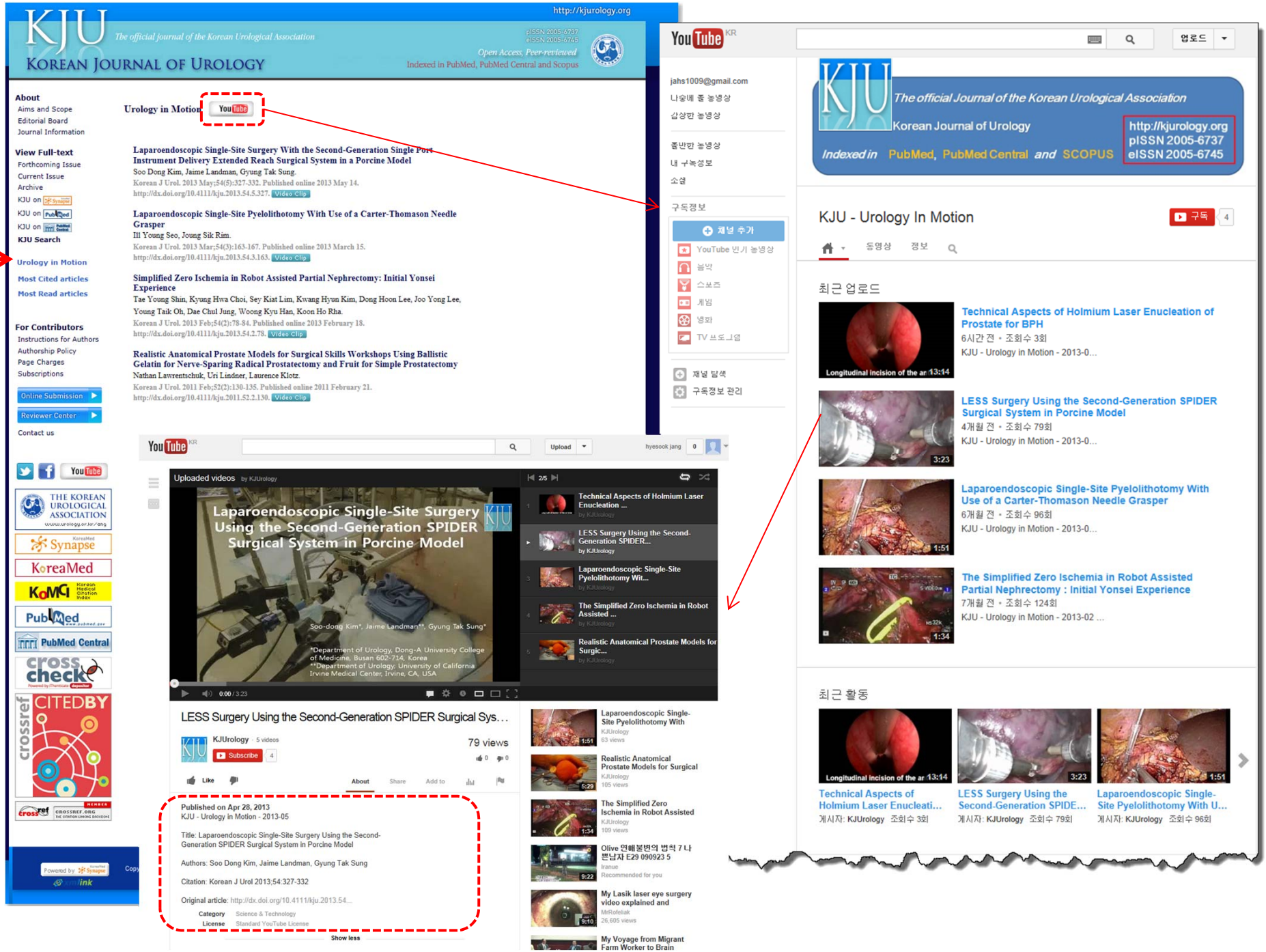
An accompanying video can be found in the 'Urology in Motion' section of the journal homepage (www.kjurology.org).

Korean J Urol 2013;54:327-332

The supplementary data can also be accessed by scanning a QR code located on the title page of this article.

REFERENCES

1. Gettman MT, Lotan Y, Napper CA, Cadeddu JA. Transvaginal laparoscopic nephrectomy: development and feasibility in the porcine model. Urology 2002;59:446-50.
2. Gettman MT, Box G, Averch T, Cadeddu JA, Cherullo E, Clayman RV, et al. Consensus statement on natural orifice transluminal endoscopic surgery and single-incision laparoscopic surgery: heralding a new era in urology? Eur Urol 2008;53:1117-20.
3. Autorino R, Cadeddu JA, Desai MM, Gettman M, Gill IS, Kavoussi LR, et al. Laparoendoscopic single-site and natural orifice transluminal endoscopic surgery in urology: a critical analysis of the literature. Eur Urol 2011;59:26-45.
4. Kaouk JH, Autorino R, Kim FJ, Han DH, Lee SW, Yinghao S, et al. Laparoendoscopic single-site surgery in urology: worldwide multi-institutional analysis of 1076 cases. Eur Urol 2011;60:998-1005.
5. Tra... CR, R...an JD, Cadeddu JA, Rane A. Laparoendos...
12. Stolzenburg JU, Kallidonis P, Oh MA, Ghulam N, Do M, Haefner T, et al. Comparative assessment of laparoscopic single-site surgery instruments to conventional laparoscopic in laboratory setting. J Endourol 2010;24:239-45.
13. Irwin BH, Rao PP, Stein RJ, Desai MM. Laparoendoscopic single site surgery in urology. Urol Clin North Am 2009;36:223-35, ix.
14. de la Fuente SG, Demaria EJ, Reynolds JD, Portenier DD, Pryor AD. New developments in surgery: Natural Orifice Transluminal Endoscopic Surgery (NOTES). Arch Surg 2007;142:295-7.
15. Rattner D, Kalloo A; ASGE/SAGES Working Group. ASGE/SAGES Working Group on Natural Orifice Translumenal Endoscopic Surgery. October 2005. Surg Endosc 2006;20:329-33.
16. Desai MM, Berger AK, Brandina R, Aron M, Irwin BH, Canes D, et al. Laparoendoscopic single-site surgery: initial hundred patients. Urology 2009;74:805-12.
17. White WM, Haber GP, Goel RK, Crouzet S, Stein RJ, Kaouk JH. Single-port urological surgery: single-center experience with the first 100 cases. Urology 2009;74:801-4.
18. Raman JD, Bagrodia A, Cadeddu JA. Single-incision, umbilical laparoscopic versus conventional laparoscopic nephrectomy: a comparison of perioperative outcomes and short-term measures...


KJU
KOREAN JOURNAL OF UROLOGY
The official journal of the Korean Urological Association
http://kjurology.org
pISSN 2005-6737
eISSN 2005-6745
Open Access, Peer-reviewed
Indexed in PubMed, PubMed Central and Scopus
About
Aims and Scope
Editorial Board
Journal Information
View Full-text
Forthcoming Issue
Current Issue
Archive
KJU on Synapse
KJU on PubMed
KJU on PubMed Central
KJU Search
Urology in Motion
Most Cited articles
Most Read articles
For Contributors
Instructions for Authors
Authorship Policy
Page Charges
Subscriptions
Online Submission
Reviewer Center
Contact us
Urology in Motion
YouTube
Laparoendoscopic Single-Site Surgery With the Second-Generation Single Port Instrument Delivery Extended Reach Surgical System in a Porcine Model
Soo Dong Kim, Jaime Landman, Gyung Tak Sung.
Korean J Urol. 2013 May;54(5):327-332. Published online 2013 May 14.
http://dx.doi.org/10.4111/kju.2013.54.5.327. Video Clip
Laparoendoscopic Single-Site Pyelolithotomy With Use of a Carter-Thomason Needle Grasper
Ill Young Seo, Joung Sik Rim.
Korean J Urol. 2013 Mar;54(3):163-167. Published online 2013 March 15.
http://dx.doi.org/10.4111/kju.2013.54.3.163. Video Clip
Simplified Zero Ischemia in Robot Assisted Partial Nephrectomy: Initial Yonsei Experience
Tae Young Shin, Kyung Hwa Choi, Sey Kiat Lim, Kwang Hyun Kim, Dong Hoon Lee, Joo Yong Lee, Young Taik Oh, Dae Chul Jung, Woong Kyu Han, Koon Ho Rha.
Korean J Urol. 2013 Feb;54(2):78-84. Published online 2013 February 18.
http://dx.doi.org/10.4111/kju.2013.54.2.78. Video Clip
Realistic Anatomical Prostate Models for Surgical Skills Workshops Using Ballistic Gelatin for Nerve-Sparing Radical Prostatectomy and Fruit for Simple Prostatectomy
Nathan Lawrentschuk, Uri Lindner, Laurence Klotz.
Korean J Urol. 2011 Feb;52(2):130-135. Published online 2011 February 21.
http://dx.doi.org/10.4111/kju.2011.52.2.130. Video Clip
THE KOREAN UROLOGICAL ASSOCIATION
Synapse
KoreaMed
KoMCI
PubMed
PubMed Central
crossref
CITEDBY
YouTube
jahs1009@gmail.com
나중에 볼 동영상
감상한 동영상
좋반한 동영상
내 구독정보
소셜
구독정보
채널 추가
YouTube 인기 동영상
음악
스포츠
게임
영화
TV 프로그램
채널 탐색
구독정보 관리
업로드
KJU
The official Journal of the Korean Urological Association
Korean Journal of Urology
Indexed in PubMed, PubMed Central and SCOPUS
http://kjurology.org
pISSN 2005-6737
eISSN 2005-6745
KJU - Urology In Motion
구독 4
동영상
정보
최근 업로드
Technical Aspects of Holmium Laser Enucleation of Prostate for BPH
6시간 전 • 조회수 3회
KJU - Urology in Motion - 2013-0...
LESS Surgery Using the Second-Generation SPIDER Surgical System in Porcine Model
4개월 전 • 조회수 79회
KJU - Urology in Motion - 2013-0...
Laparoendoscopic Single-Site Pyelolithotomy With Use of a Carter-Thomason Needle Grasper
6개월 전 • 조회수 96회
KJU - Urology in Motion - 2013-0...
The Simplified Zero Ischemia in Robot Assisted Partial Nephrectomy : Initial Yonsei Experience
7개월 전 • 조회수 124회
KJU - Urology in Motion - 2013-02 ...
최근 활동
Technical Aspects of Holmium Laser Enucleati...
게시자: KJUrology 조회수 3회
LESS Surgery Using the Second-Generation SPIDE...
게시자: KJUrology 조회수 79회
Laparoendoscopic Single-Site Pyelolithotomy With U...
게시자: KJUrology 조회수 96회
Upload
hyesook jang
Uploaded videos by KJUrology
Laparoendoscopic Single-Site Surgery Using the Second-Generation SPIDER Surgical System in Porcine Model
Soo-dong Kim*, Jaime Landman**, Gyung Tak Sung*
*Department of Urology, Dong-A University College of Medicine, Busan 602-714, Korea
**Department of Urology, University of California Irvine Medical Center, Irvine, CA, USA
Technical Aspects of Holmium Laser Enucleation ...
LESS Surgery Using the Second-Generation SPIDER...
by KJUrology
Laparoendoscopic Single-Site Pyelolithotomy Wit...
The Simplified Zero Ischemia in Robot Assisted ...
Realistic Anatomical Prostate Models for Surgic...
LESS Surgery Using the Second-Generation SPIDER Surgical Sys...
KJUrology · 5 videos
79 views
Subscribe 4
Like
About
Share
Add to
Published on Apr 28, 2013
KJU - Urology in Motion - 2013-05
Title: Laparoendoscopic Single-Site Surgery Using the Second-Generation SPIDER Surgical System in Porcine Model
Authors: Soo Dong Kim, Jaime Landman, Gyung Tak Sung
Citation: Korean J Urol 2013;54:327-332
Original article: http://dx.doi.org/10.4111/kju.2013.54...
Category Science & Technology
License Standard YouTube License
Show less
Laparoendoscopic Single-Site Pyelolithotomy With
KJUrology
63 views
Realistic Anatomical Prostate Models for Surgical
KJUrology
105 views
The Simplified Zero Ischemia in Robot Assisted
KJUrology
109 views
Olive 연애불변의 법칙 7 나쁜남자 E29 090923 5
Iranue
Recommended for you
My Lasik laser eye surgery video explained and
MrRofeliak
26,605 views
My Voyage from Migrant Farm Worker to Brain

samples from other ethnic groups was obtained from a large panel of anonymous, unrelated DNA samples from the Human Variation Panel, available through the Coriell Institute for Medical Research (Camden, NJ, USA). We specifically used sets of DNA samples obtained from four distinct ethnic groups residing in the USA, including 48 Han Chinese, 48 Japanese, 48 African Americans, and 48 European Americans individuals. The sample size was sufficient to achieve the ethnic diversity (15).

Sequencing analysis of DPYD

Promoter, all exons, and exon-intron boundaries were PCR-amplified and directly sequenced using the ABI PRISM 3730 genetic analyzer (Applied Biosystems, Foster City, CA, USA). Primers for the amplification and sequencing analysis were designed using Primer3 software (http://frodo.wi.mit.edu) based on the sequence of *DPYD*. The coding sequence of the gene was compared with a GenBank sequence (Ref. genome seq.: NG_008807.1). Information on the primers is listed in Supplementary Table 2. Sequence variants were verified by chromatograms using SeqMan software (DNASTAR, Madison, WI, USA).

Statistical analysis

The chi-square tests were used to determine whether individual variants were in Hardy-Weinberg equilibrium at each locus in each population. Fisher's exact test was calculated by using the Statistical Analysis System 9.2 (SAS). For in silico analysis, we used FastSNP (http://fastsnp.ibms.sinica.edu.tw), Expasy (http://expasy.org/tools), and UTRScan (http://itbtools.ba.itb.cnr.it/utrscan) programs to predict the function of novel SNPs.

Ethics statement

The protocol and consent forms of this study were reviewed and approved by the institutional review board of Sogang University (2010_690). Informed consent was submitted by the subjects.

RESULTS

In order to discover *DPYD* SNPs, we directly sequenced 288 samples from five ethnic groups (Korean, Han Chinese, Japanese, African American and European American). As a result, 56 SNPs were found, including 18 novel SNPs. Among the novel SNPs, five (+199381A > G, Asn151Asp; +199404T > C, Phe158Phe; +221378A > G, Val162Val; +221531C > T, Asp213Asp; and +841847T > C, Leu993Arg) were located in coding regions (Table 1).

MAFs and relative physical coordinates of all SNPs are shown in Table 1 and Supplementary Fig. 1. Allele frequencies were nearly the same among the Korean, Han Chinese, and Japanese samples, whereas several SNPs showed different genetic distributions between Asians and other ethnic populations (African American and European American). Among those SNPs, the frequency of a core marker, *9A (rs1801265), in Asian populations was somewhat lower than in the African American and European American samples (MAF: Korean = 0.016, Han Chinese = 0.043, Japanese = 0.065, African American = 0.490, European American = 0.177). In contrast, other core markers, *7 (rs72549309), *8 (rs1801266), *2A (rs3918290), *9B (rs1801267), and *10 (rs1801268), were monomorphic in all the studied populations.

In order to find significant differences in allele frequencies between Korean and other ethnic groups, Fisher's exact test was additionally conducted (Supplementary Fig. 1). The test results indicated that there were significant differences between Asians and other ethnic populations (African American and European American) in the six SNPs (*9A, rs668296, rs2811178, rs56160474, rs291592, and rs291593). Among them, a core marker *9A (rs1801265) showed the most significant differences ($P = 6.61 \times 10^{-19}$ and 2.47×10^{-6} for Korean vs African American and Korean vs European American samples, respectively). Moreover, the reversal of major and minor alleles was observed in rs291592 (C allele is major in Asians, but minor in African American and European American). Also, genetic difference was also observed within the Asians in rs291593 (T allele is common in Korean and Han Chinese, whereas it is rarely found in Japanese, African American, and European American). Detailed information about core markers such as star allele nomenclature, position, allele change, amino acid change, and any known roles in pharmacogenetics is presented in Table 1.

DISCUSSION

DPYD is an enzyme that takes part in a rate-limiting step of 5-FU catabolism. Previous studies have shown that the enzyme deficiency state of the 5-FU degradation pathway causes damage and degeneration of the central nervous system (8, 14, 16). Thus *DPYD* is known as a biomarker of severe toxicity in chemotherapeutic agents. Several *DPYD* polymorphisms have been reported as clinical loci associated with a reduced level of enzyme activity and severe 5-FU toxicity, and these polymorphisms are called "core markers". The most studied core markers are *DPYD**9A (rs1801265) and *DPYD**2A (rs3918290) (17-19).

The core marker *9A (rs1801265) is located in the coding region and induces amino acid change (cysteine to arginine) that may affect enzyme activity. It is relatively common in Caucasian populations (MAF > 10%), although *DPYD* enzyme activity is not affected by the polymorphism (20-23). This polymorphism is rare in Asian populations, but previous studies have reported that the incidence of clinical presentation of enzyme deficiency caused by heterozygous *9A (rs1801265) is significantly higher than the wild type ($P < 0.05$) in the Chinese population (23-26). In this study, frequency of *9A (rs1801265) showed a similar trend

http://dx.doi.org/10.3346/jkms.2013.28.8.1129

Journal of Korean Medical Science
www.jkms.org
About the Journal | Information for Contributors | e-Submission

Original Article — Open Access

J Korean Med Sci. 2013 Aug;28(8):1129-1133. English.
Published online 2013 July 31. http://dx.doi.org/10.3346/jkms.2013.28.8.1129

Screening of Dihydropyrimidine Dehydrogenase Genetic Variants by Direct Sequencing in Different Ethnic Groups

Joong-Gon Shin,[1] Hyun Sub Cheong,[2] Jason Yongha Kim,[1] Lyoung Hyo Kim,[2] Chang Soo Han,[2] Ji On Kim,[2] Hae Deun Kim,[3] Young Hoon Kim,[3] Myeon Woo Chung,[3] Soon Young Han,[4] and Hyoung Doo Shin[1,2]

[1]Department of Life Science, Sogang University, Seoul, Korea.
[2]Department of Genetic Epidemiology, SNP Genetics, Inc., Seoul, Korea.
[3]Clinical Research Division, National Institute of Food and Drug Safety Evaluation, Osong Health Technology Administration Complex, Osong, Korea.
[4]Toxicological Evaluation and Research Department, National Institute of Food and Drug Safety Evaluation, Osong Health Technology Administration Complex, Osong, Korea.

Address for Correspondence: Hyoung Doo Shin, PhD. Department of Life Science, Sogang University, 35 Baekbeom-ro, Mapo-gu, Seoul 121-742, Korea. Tel: +82.2-705-8615, Fax: +82.2-3273-1680, Email: hdshin@sogang.ac.kr

Received December 28, 2012; Accepted June 07, 2013.

Abstract

Dihydropyrimidine dehydrogenase (DPYD) is an enzyme that regulates the rate-limiting step in pyrimidine metabolism, especially catabolism of fluorouracil, a chemotherapeutic agent for cancer. In order to determine the genetic distribution of *DPYD*, we directly sequenced 288 subjects from five ethnic groups (96 Koreans, 48 Japanese, 48 Han Chinese, 48 African Americans, and 48 European Americans). As a result, 56 polymorphisms were observed, including 6 core polymorphisms and 18 novel polymorphisms. Allele frequencies were nearly the same across the Asian populations, Korean, Han Chinese and Japanese, whereas several SNPs showed different genetic distributions between Asians and other ethnic populations (African American and European American). Additional in silico analysis was performed to predict the function of novel SNPs. One nonsynonymous SNP (+19938T>G, Asn151Asp) was predicted to change its polarity of amino acid (Asn, neutral to Asp, negative). These findings would be valuable for further research, including pharmacogenetic and drug responses studies.

Keywords: Ethnic Groups, Pharmacogenetics, Dihydropyrimidine Dehydrogenase, Fluorouracil.

INTRODUCTION

Pharmacogenetics focuses on identifying the role of a gene of interest that mediates drug-dependent mechanisms or triggers adverse effects. Therefore, dealing with the gene of interest is important to predict individual drug responses and toxicities. Genetic variations in genes of

Formats: Abstract, Article, PubReader, PDF, Figures + Tables, References, Supplementary Materials
Links to: KoreaMed, the Journal
Export: Download Citation, E-mail, Twitter, Facebook
Tables:
Show all...

Supplementary Materials:
Supplementary Fig. 1 (292K, pdf)
Supplementary Table 1 (94K, pdf)
Supplementary Table 2 (97K, pdf)
Show all...

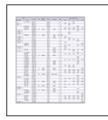


Table 1
Allele frequency of *DPYD* in study (n=288)

*Alleles of core markers were verified from previous studies. (14,19). -, monomorphic; †, core SNP; ‡, major and minor alleles determined by frequency of all subjects. KR, Korean; HC, Han Chinese; JP, Japanese; AA, African American; EA, European American.

Notes

This research was supported by a grant (11182MFDS658) from Ministry of Food and Drug Safety.

The authors have no conflicts of interest to disclose.

Supplementary Material

Supplementary Fig. 1

Minor allele frequency of DPYD among Korean, Han Chinese, Japanese, African American and European American samples (upper panel). Fisher's exact test of allele distribution between Korean and other ethnic groups (lower panel). Relative physical coordinates of SNPs are shown at top of the figure. Bolded SNPs indicate pharmacogenetic core SNPs. Novel SNPs are labeled with their location and allele change. KR, Korean; HC, Han Chinese; JP, Japanese; AA, African American; EA, European American.

Click here to view. (292K, pdf)

Supplementary Table 1

Comparison of minor allele frequency of *9A (rs1801265) and *2A (rs3918290) between present study and previous studies

Click here to view. (94K, pdf)

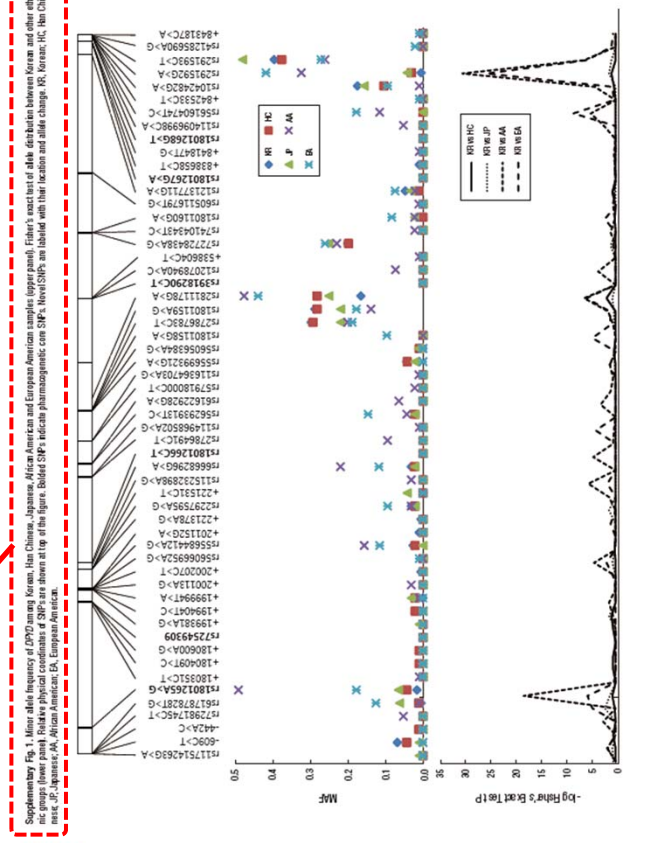
Supplementary Table 2

Primer information of *DPYD*

Click here to view. (97K, pdf)

REFERENCES

1. Savonarola A, Palmirotta R, Guadagni F, Silvestris F. Pharmacogenetics and pharmacogenomics: role of mutational analysis in anti-cancer targeted therapy. Pharmacogenomics J 2012;12:277–286.



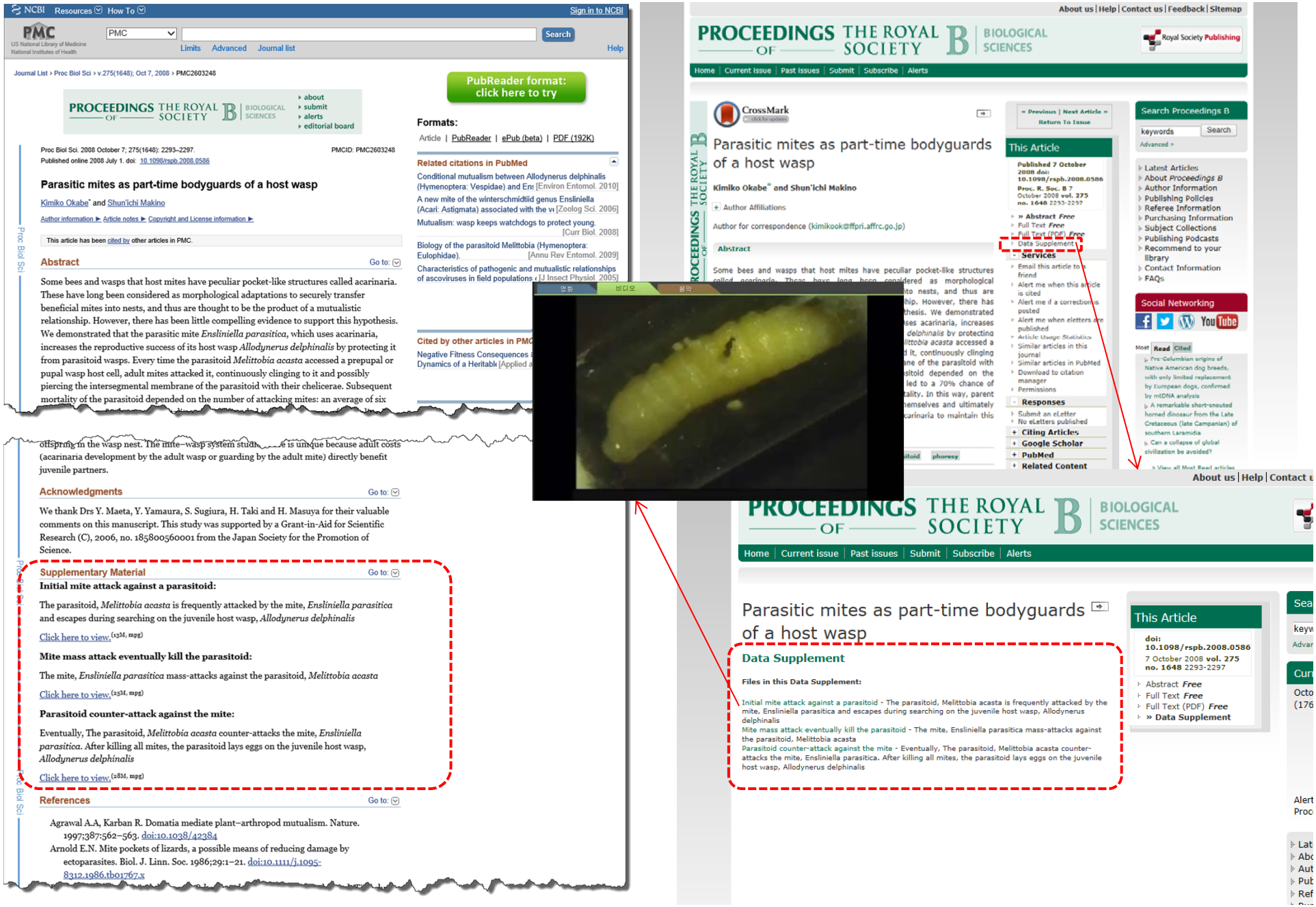
Supplementary Fig. 1. Minor allele frequency of DPYD among Korean, Han Chinese, Japanese, African American and European American samples (upper panel). Fisher's exact test of allele distribution between Korean and other ethnic groups (lower panel). Relative physical coordinates of SNPs are shown at top of the figure. Bolded SNPs indicate pharmacogenetic core SNPs. Novel SNPs are labeled with their location and allele change. KR, Korean; HC, Han Chinese; JP, Japanese; AA, African American; EA, European American.

http://jkms.

Supplementary Table 1. Comparison of minor allele frequency of *9A (rs1801265) and *2A (rs3918290) between present study and previous studies

		MAF	
		*9A (rs1801265)	*2A (rs3918290)
Present study	KR	0.016	-
	HC	0.043	-
	JP	0.065	-
	AA	0.49	-
	EA	0.177	-
Previous studies	KR	0.025 (24)	0 (24)
	HC	0.05 (25)	NR
	JP	0.037 (26)	0 (23)
	CA	0.16 (19), 0.21 (21), 0.34 (23)	0.013, 0.007 (23)

MAF, minor allele frequency; -, monomorphic; NR, not reported; KR, Korean; HC, Han Chinese; JP, Japanese; AA, African American; EA, European American; CA, Caucasian.


PubReader format: click here to try
Parasitic mites as part-time bodyguards of a host wasp
Kimiko Okabe and Shun'ichi Makino
Abstract
Some bees and wasps that host mites have peculiar pocket-like structures called acarinaria. These have long been considered as morphological adaptations to securely transfer beneficial mites into nests, and thus are thought to be the product of a mutualistic relationship. However, there has been little compelling evidence to support this hypothesis. We demonstrated that the parasitic mite Ensliniella parasitica, which uses acarinaria, increases the reproductive success of its host wasp Allodynerus delphinalis by protecting it from parasitoid wasps. Every time the parasitoid Melittobia acasta accessed a prepupal or pupal wasp host cell, adult mites attacked it, continuously clinging to it and possibly piercing the intersegmental membrane of the parasitoid with their chelicerae. Subsequent mortality of the parasitoid depended on the number of attacking mites: an average of six
offspring in the wasp nest. The mite–wasp system stud e is unique because adult costs (acarinaria development by the adult wasp or guarding by the adult mite) directly benefit juvenile partners.
Acknowledgments
We thank Drs Y. Maeta, Y. Yamaura, S. Sugiura, H. Taki and H. Masuya for their valuable comments on this manuscript. This study was supported by a Grant-in-Aid for Scientific Research (C), 2006, no. 18580060001 from the Japan Society for the Promotion of Science.
Supplementary Material
Initial mite attack against a parasitoid:
The parasitoid, Melittobia acasta is frequently attacked by the mite, Ensliniella parasitica and escapes during searching on the juvenile host wasp, Allodynerus delphinalis
Click here to view.
Mite mass attack eventually kill the parasitoid:
The mite, Ensliniella parasitica mass-attacks against the parasitoid, Melittobia acasta
Click here to view.
Parasitoid counter-attack against the mite:
Eventually, The parasitoid, Melittobia acasta counter-attacks the mite, Ensliniella parasitica. After killing all mites, the parasitoid lays eggs on the juvenile host wasp, Allodynerus delphinalis
Click here to view.
References
Agrawal A.A, Karban R. Domatia mediate plant–arthropod mutualism. Nature. 1997;387:562–563. doi:10.1038/42384
Arnold E.N. Mite pockets of lizards, a possible means of reducing damage by ectoparasites. Biol. J. Linn. Soc. 1986;29:1–21. doi:10.1111/j.1095-8312.1986.tb01767.x
Data Supplement
Files in this Data Supplement:
Initial mite attack against a parasitoid - The parasitoid, Melittobia acasta is frequently attacked by the mite, Ensliniella parasitica and escapes during searching on the juvenile host wasp, Allodynerus delphinalis
Mite mass attack eventually kill the parasitoid - The mite, Ensliniella parasitica mass-attacks against the parasitoid, Melittobia acasta
Parasitoid counter-attack against the mite - Eventually, The parasitoid, Melittobia acasta counter-attacks the mite, Ensliniella parasitica. After killing all mites, the parasitoid lays eggs on the juvenile host wasp, Allodynerus delphinalis

PROCEEDINGS OF THE ROYAL SOCIETY B

Proc. R. Soc. B (2008) 275, 2293–2297
doi:10.1098/rspb.2008.0586
Published online 1 July 2008

Parasitic mites as part-time bodyguards of a host wasp

Kimiko Okabe* and Shun'ichi Makino

Forestry and Forest Products Research Institute, Tsukuba, Ibaraki 305-8687, Japan

Some bees and wasps that host mites have peculiar pocket-like structures called acarinaria. These have long been considered as morphological adaptations to securely transfer beneficial mites into nests, and thus are thought to be the product of a mutualistic relationship. However, there has been little compelling evidence to support this hypothesis. We demonstrated that the parasitic mite *Ensliniella parasitica*, which uses acarinaria, increases the reproductive success of its host wasp *Allodynerus delphinalis* by protecting it from parasitoid wasps. Every time the parasitoid *Melittobia acasta* accessed a prepupal or pupal wasp host cell, adult mites attacked it, continuously clinging to it and possibly piercing the intersegmental membrane of the parasitoid with their chelicerae. Subsequent mortality of the parasitoid depended on the number of attacking mites: an average of six mites led to a 70% chance of mortality, and 10 mites led to a 100% chance of mortality. In this way, parent mites protect the food source (juvenile wasps) for themselves and ultimately for their offspring. We propose that wasps evolved acarinaria to maintain this protective guarding behaviour.

Keywords: acarinaria; mutualism; parasitism; parasitoid; phoresy

1. INTRODUCTION

Mutualisms are ubiquitous in nature and are of fundamental importance in ecosystems. However, we face several challenges in characterizing these interactions due to their instability across environments, as well as in defining particular relationships as mutualisms (Boucher 1985; Cushman & Beattie 1991; Douglas 1994; Herre *et al.* 1999; Wäckers *et al.* 2005). For example, a broad continuum of heterospecific interactions exists among two or more organisms that provide unequal reciprocal benefits, and the relationships among all associated organisms cannot always be clearly and directly defined. For example, many ants live on plants that provide the ants shelter and nutritious nectar, while the ants attack and thus protect the plant from herbivores that would otherwise damage the plant; yet, if no herbivore enemy appears, the plant receives no benefit, while the ant continues to benefit from the food and shelter (Wäckers *et al.* 2005; Bronstein *et al.* 2006). In addition, the nature of many interactions are difficult to demonstrate because the extent of benefit to each organism can be spatiotemporally unstable (Bronstein *et al.* 2003, 2006; Sachs & Simms 2006) or one interaction may be masked by another (e.g. mycorrhizal fungi and endosymbiotic bacteria of insects; Fitter & Moyersoen 1996; Scarborough *et al.* 2005).

In interspecific relationships between mites and other organisms, among the most intriguing phenomena are the distinctive external structures found on some hosts. For example, some plants develop leaf domatia, tufts of hair or small invaginations on the undersides of leaves, which function as shelters for predatory or fungivorous arthropods, including mites, and are assumed to mediate mutualisms (Walter 1996; Agrawal & Karban 1997). Pockets on some lizards are similar to domatia in that they harbour mites, although they may have developed to concentrate blood-sucking chiggers in less sensitive locations, thus avoiding large-scale damage to the skin (Arnold 1986; Benton 1987). Other interesting but puzzling structures are the acarinaria found in some groups of Hymenoptera (figure 1; Skaife 1952; Soika 1987; OConnor & Klompen 1999; Makino & Okabe 2003). Acarinaria are considered one of the best examples of a mutualistic adaptation because they are apparently specialized to shelter mites, and exhibit a high specificity between hosts and mites. This hypothesis assumes that associated mites benefit hosts by destroying harmful pathogens or parasites (Eickwort 1994; OConnor & Klompen 1999), although no supporting evidence to date exists, and Klimov *et al.* (2007) suggested that acarinaria on apid bees developed to control harmful mites.

Several genera of eumenine wasps have well developed acarinaria on both sides of their scutellum, propodeum or the second matasomal tergite, in which they harbour specific ensliniellne mites (Soika 1987; Eickwort 1994; Klompen & OConnor 1995; Makino & Okabe 2003). Among them, *Allodynerus delphinalis* (Giraud 1866) is the only species whose life history with its associated mite *Ensliniella parasitica* (Vitzthum 1925) is known. The wasp, which ranges from Europe to Japan (Yamane 1990; Klompen & OConnor 1995), is a small (adult body length 6–10 mm) solitary hunting wasp that nests in dead plant stems by excavating their pith (Enslin 1922; Benno 1945; Crèvecoeur 1945). This wasp makes one to seven brood cells (approx. 4.5 mm in diameter, 20 mm in length) in a nest, and its life cycle is similar to that of other tube-nesting eumenine wasps (see Krombein 1967). A female adult lays one egg in a brood cell, which she provisions

* Author for correspondence (kimikook@ffpri.affrc.go.jp).

Electronic supplementary material is available at http://dx.doi.org/10.1098/rspb.2008.0586 or via http://journals.royalsociety.org.

Received 2 May 2008
Accepted 11 June 2008

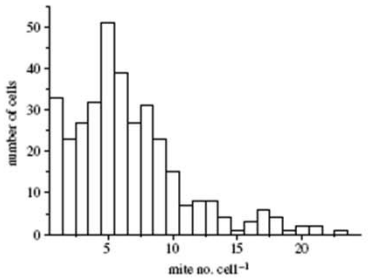


Figure 2. Frequency distribution of mites in *A. delphinalis* brood cells from nests collected in the field between 2006 and 2007. In total, 348 nests containing one to five cells were examined.

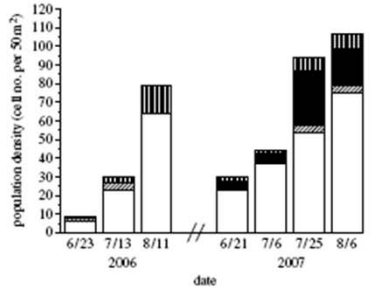


Figure 3. Number of juvenile wasps surviving to adulthood (white areas), killed by a kleptoparasitic fly (diagonally striped areas), killed by the parasitoid *M. acasta* (black areas) or died for unknown reasons (vertically striped areas) in 2006 and 2007 at the study site (5×10 m quadrat within an approx. 50×1500 m strip of *S. alnissima*).

3. RESULTS

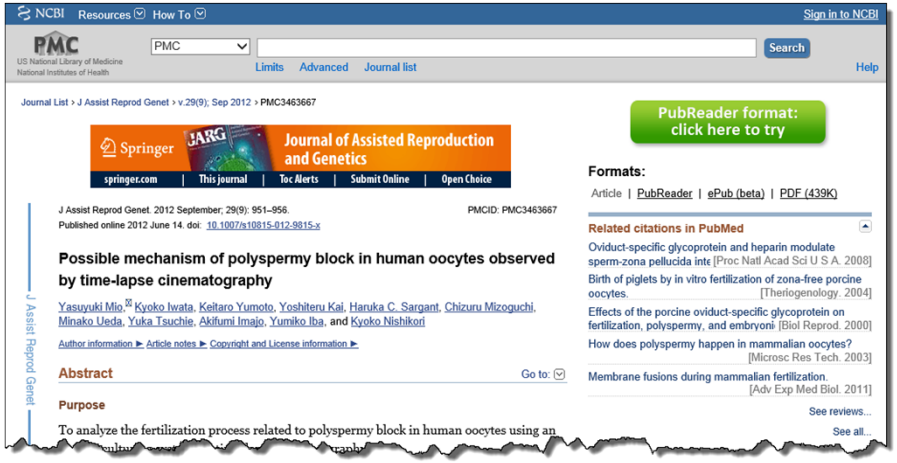
In 92.8% of host cells infested by mites, mite numbers ranged from 1 to 23 (figure 2). The mode of mites per cell was 5 and the average was 6±4.3 (mean±s.d., $n=348$). The distribution of mite numbers in a cell (figure 2) was not random ($\chi^2=160.154$, $p=0.00$) but concentrated (variance : mean=2.94, $p=0.00$). Nests were sometimes infested with other natural enemies, including the parasitoid wasp (*M. acasta*), a kleptoparasitic fly and unknown pathogens. The latter two enemies occurred infrequently, with annual infestation rates of less than 5% (figure 3). Although very low in the first year, the infestation rate of *M. acasta* greatly increased in the second year (figure 3), in parallel with increases in the population density of *A. delphinalis*. In the field, 70% of cells invaded by *M. acasta* had a single parasitoid (with an average of 1.52±1.0, $n=33$). When the parasitoid and adult mites co-occurred in a host cell, either all mites or all parasitoids died. In cells without parasitoids, the mites completed their normal life cycles on the host.

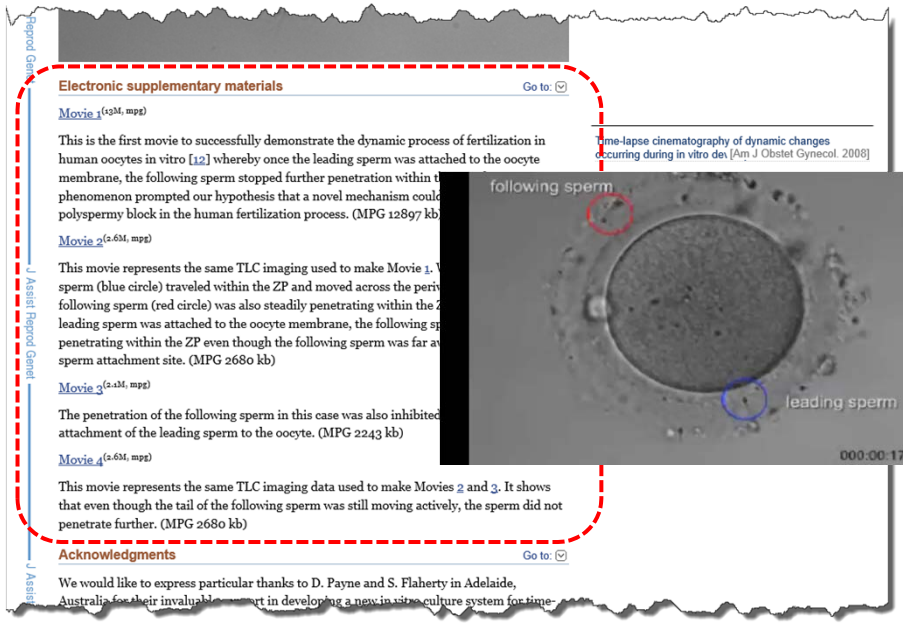
For a more detailed analysis of interactions between the parasitoid and the mites, we observed their behaviour in the laboratory. At the beginning of the experiment (for the first 1–3 days), the introduced parasitoid occasionally walked on the surface of the tube or the host, but spent most of the time hiding near the cotton plug. By contrast, the mites usually crawled on the surface of the host or the cell wall (see electronic supplementary material 1). Although the mites did not interact much with each other, even during occasional encounters, when mites encountered the parasitoid, both females and males clung to it, whether it was on or off the host, and the parasitoid attempted to escape from the clinging mites (electronic supplementary materials 1 and 2). In some cases, attacked parasitoids eventually died. Based on observations of mites clinging to an injured parasitoid, the mites may pierce the intersegmental membrane of the parasitoid with their chelicerae. However, in other cases, the parasitoid counter-attacked mites by biting them repeatedly on their dorsum (electronic supplementary material 3). Although the trigger of this aggression in *M. acasta* was unclear, physical contact with the host (*A. delphinalis*) appeared to promote the behaviour during the first 12–72 hours.

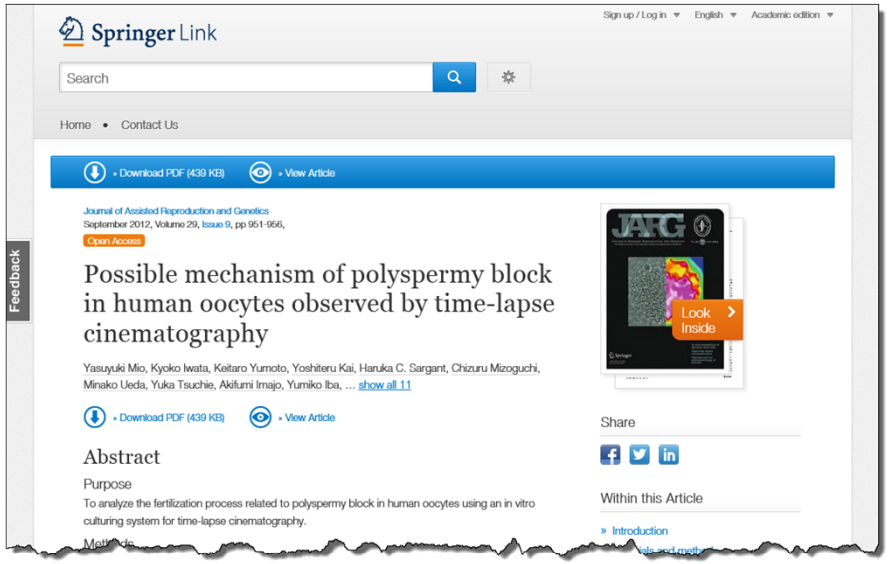
The probability of mites killing the parasitoid depended on the number of mites present (logistic regression analysis, $\chi^2_3=42.448$, $p<0.00001$; figure 4*a*). Under mite-free conditions, the parasitoid laid several eggs on the host, similar to previous reports for many *Melittobia* species (Maeta 1978; Dahms 1984). While the number of attacks on a single parasitoid was significantly higher with seven than with three mites ($z=3.473$, $p=0.000515$), the number of attacks per mite was not significantly different between seven and three attacking mites ($z=0.333$, $p=0.7388$; figure 4*b*,*c*). When the parasitoid died, almost all mites survived to produce offspring on the pupal host. However, when the parasitoid successfully laid eggs on the host, all mites and the host died.

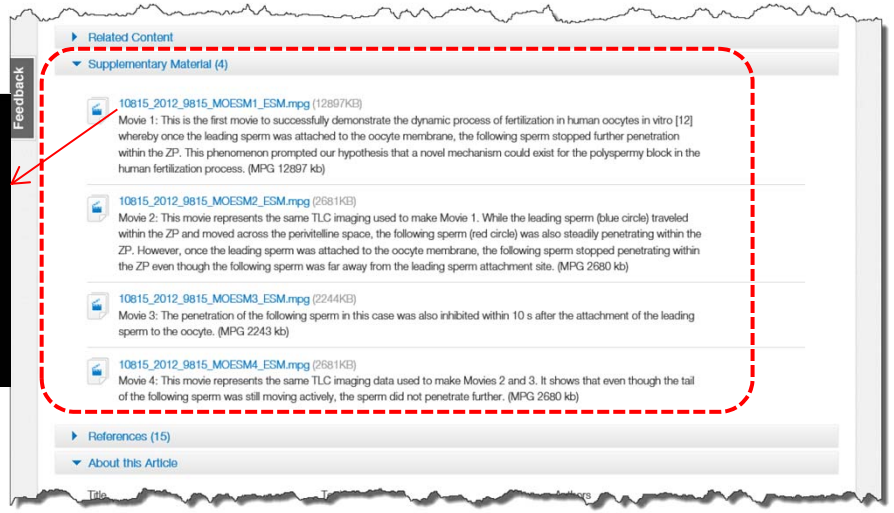
4. DISCUSSION

Our results provide the first evidence that the relationship between the endosymbiotic mite *E. parasitica* and its host wasp *A. delphinalis* is a mutualism that is usually masked by parasitism. The mutualism is mediated by protection–reward: the mite protects the host wasp and feeds on the host's haemolymph as a reward that does not kill the host. Solitary wasps generally employ various strategies for their offspring in terms of nest structure (Tepedino *et al.* 1979) or behaviour (O'Neill 2001) against natural enemies. However, the use of symbionts as 'bodyguards' against natural enemies has never been documented in either solitary or social Hymenoptera (Schmid-Hempel 1998; O'Neill 2001). Predatory organisms may become reliable defenders of their hosts, as in many ant–plant mutualisms (Bronstein *et al.* 2006); however, *E. parasitica* and related species are not known to prey upon other species, although some might be accidental predators (OConnor 1982). Our results provide the first evidence of any astigmatid mite having antagonistic, often lethal, confrontations with a parasitoid. However, the mite does not seem to have a physical structure particularly adapted to killing parasitoids, and we suspect that by clinging to the enemy with their chelicerae, in the same way they pierce the skin of the wasp host to feed on it, they haphazardly


NCBI Resources How To Sign in to NCBI
PMC
US National Library of Medicine National Institutes of Health
PMC Search
Limits Advanced Journal list Help
Journal List › J Assist Reprod Genet › v.29(9); Sep 2012 › PMC3463667
Springer JARG Journal of Assisted Reproduction and Genetics
springer.com | This journal | Toc Alerts | Submit Online | Open Choice
PubReader format: click here to try
J Assist Reprod Genet. 2012 September; 29(9): 951–956.
Published online 2012 June 14. doi: 10.1007/s10815-012-9815-x
PMCID: PMC3463667
Possible mechanism of polyspermy block in human oocytes observed by time-lapse cinematography
Yasuyuki Mio, Kyoko Iwata, Keitaro Yumoto, Yoshiteru Kai, Haruka C. Sargant, Chizuru Mizoguchi, Minako Ueda, Yuka Tsuchie, Akifumi Imajo, Yumiko Iba, and Kyoko Nishikori
Author information ► Article notes ► Copyright and License information ►
Abstract
Go to:
Purpose
To analyze the fertilization process related to polyspermy block in human oocytes using an
Formats:
Article | PubReader | ePub (beta) | PDF (439K)
Related citations in PubMed
Oviduct-specific glycoprotein and heparin modulate sperm-zona pellucida inte [Proc Natl Acad Sci U S A. 2008]
Birth of piglets by in vitro fertilization of zona-free porcine oocytes. [Theriogenology. 2004]
Effects of the porcine oviduct-specific glycoprotein on fertilization, polyspermy, and embryoni [Biol Reprod. 2000]
How does polyspermy happen in mammalian oocytes? [Microsc Res Tech. 2003]
Membrane fusions during mammalian fertilization. [Adv Exp Med Biol. 2011]
See reviews...
See all...
J Assist Reprod Genet


Electronic supplementary materials
Go to:
Movie 1 (12M, mpg)
This is the first movie to successfully demonstrate the dynamic process of fertilization in human oocytes in vitro [12] whereby once the leading sperm was attached to the oocyte membrane, the following sperm stopped further penetration within t
phenomenon prompted our hypothesis that a novel mechanism coul
polyspermy block in the human fertilization process. (MPG 12897 kb)
Movie 2 (2.6M, mpg)
This movie represents the same TLC imaging used to make Movie 1.
sperm (blue circle) traveled within the ZP and moved across the peri
following sperm (red circle) was also steadily penetrating within the
leading sperm was attached to the oocyte membrane, the following sp
penetrating within the ZP even though the following sperm was far a
sperm attachment site. (MPG 2680 kb)
Movie 3 (2.1M, mpg)
The penetration of the following sperm in this case was also inhibited
attachment of the leading sperm to the oocyte. (MPG 2243 kb)
Movie 4 (2.6M, mpg)
This movie represents the same TLC imaging data used to make Movies 2 and 3. It shows that even though the tail of the following sperm was still moving actively, the sperm did not penetrate further. (MPG 2680 kb)
Acknowledgments
Go to:
We would like to express particular thanks to D. Payne and S. Flaherty in Adelaide,
Australia for their invaluable
in developing a new in vitro culture system for time-
Time-lapse cinematography of dynamic changes occurring during in vitro de [Am J Obstet Gynecol. 2008]
following sperm
leading sperm
00:00:17:50
J Assist Reprod Genet


Springer Link
Sign up / Log in English Academic edition
Search
Home • Contact Us
Feedback
» Download PDF (439 KB) » View Article
Journal of Assisted Reproduction and Genetics
September 2012, Volume 29, Issue 9, pp 951-956,
Open Access
Possible mechanism of polyspermy block in human oocytes observed by time-lapse cinematography
Yasuyuki Mio, Kyoko Iwata, Keitaro Yumoto, Yoshiteru Kai, Haruka C. Sargant, Chizuru Mizoguchi, Minako Ueda, Yuka Tsuchie, Akifumi Imajo, Yumiko Iba, ... show all 11
Look Inside
» Download PDF (439 KB) » View Article
Share
Abstract
Purpose
To analyze the fertilization process related to polyspermy block in human oocytes using an in vitro culturing system for time-lapse cinematography.
Within this Article
» Introduction


Feedback
Related Content
Supplementary Material (4)
10815_2012_9815_MOESM1_ESM.mpg (12897KB)
Movie 1: This is the first movie to successfully demonstrate the dynamic process of fertilization in human oocytes in vitro [12] whereby once the leading sperm was attached to the oocyte membrane, the following sperm stopped further penetration within the ZP. This phenomenon prompted our hypothesis that a novel mechanism could exist for the polyspermy block in the human fertilization process. (MPG 12897 kb)
10815_2012_9815_MOESM2_ESM.mpg (2681KB)
Movie 2: This movie represents the same TLC imaging used to make Movie 1. While the leading sperm (blue circle) traveled within the ZP and moved across the perivitelline space, the following sperm (red circle) was also steadily penetrating within the ZP. However, once the leading sperm was attached to the oocyte membrane, the following sperm stopped penetrating within the ZP even though the following sperm was far away from the leading sperm attachment site. (MPG 2680 kb)
10815_2012_9815_MOESM3_ESM.mpg (2244KB)
Movie 3: The penetration of the following sperm in this case was also inhibited within 10 s after the attachment of the leading sperm to the oocyte. (MPG 2243 kb)
10815_2012_9815_MOESM4_ESM.mpg (2681KB)
Movie 4: This movie represents the same TLC imaging data used to make Movies 2 and 3. It shows that even though the tail of the following sperm was still moving actively, the sperm did not penetrate further. (MPG 2680 kb)
References (15)
About this Article

J Assist Reprod Genet (2012) 29:951–956
DOI 10.1007/s10815-012-9815-x

GAMETE BIOLOGY

Possible mechanism of polyspermy block in human oocytes observed by time-lapse cinematography

Yasuyuki Mio · Kyoko Iwata · Keitaro Yumoto · Yoshiteru Kai · Haruka C. Sargant · Chizuru Mizoguchi · Minako Ueda · Yuka Tsuchie · Akifumi Imajo · Yumiko Iba · Kyoko Nishikori

Received: 23 March 2012 / Accepted: 28 May 2012 / Published online: 14 June 2012

Abstract
Purpose To analyze the fertilization process related to polyspermy block in human oocytes using an in vitro culturing system for time-lapse cinematography.
Methods We had 122 oocytes donated for this study from couples that provided informed consent. We recorded human oocytes at 2,000 to 2,800 frames every 10 s during the fertilization process and thereafter every 2 min using a new in vitro culture system originally developed by the authors for time-lapse cinematography. We displayed 30 frames per second for analysis of the polyspermy block during fertilization.
Results Three oocytes showed the leading and following sperm within the zona pellucida in the same microscopic field. The dynamic images obtained during the fertilization process using this new system revealed that once a leading sperm penetrated the zona pellucida and attached to the oocyte membrane, a following sperm was arrested from further penetration into the zona pellucida within 10 s.
Conclusions The present results strongly suggest the existence of a novel mechanism of polyspermy block that takes place at the zona pellucida immediately after fertilization. These findings are clearly different from previous mechanisms describing polyspermy block as the oocyte membrane block to sperm penetration and the zona reaction. The finding presented herein thus represents a novel discovery about the highly complicated polyspermy block mechanism occurring in human oocytes.

Keywords Polyspermy block · Time-lapse cinematography (TLC) · Human fertilization process · Zona pellucida · Embryonic development

Capsule We found that the novel mechanism of polyspermy block which is definitely different from the membrane block or zona reaction in human fertilization process using time-lapse cinematography.

Preliminary results of this study have been presented at the 65th annual meeting of American Society of Reproductive Medicine (ASRM) in 2009 and 3rd Congress of the Asia Pacific Initiative on Reproduction (ASPIRE) in 2010.

Electronic supplementary material The online version of this article (doi:10.1007/s10815-012-9815-x) contains supplementary material, which is available to authorized users.

Y. Mio (✉) · K. Iwata · K. Yumoto · Y. Kai · H. C. Sargant · C. Mizoguchi · M. Ueda · Y. Tsuchie · A. Imajo · Y. Iba · K. Nishikori
Reproductive Centre, Mio Fertility Clinic,
2-1-1, Kuzumo-Minami,
Yonago 683-0008, Japan
e-mail: yasmio@mfc.or.jp
URL: http://www.mfc.or.jp/

Introduction

The development of assisted reproductive technology (ART) has recently enabled the direct observation of human oocytes, revealing various mysterious phenomena involving the beginning of life. However, it is undeniable that frequent microscopic examinations of human early embryos may have negative effects on them, making it difficult to obtain reliable detailed information of human embryonic development from still images. We therefore developed an in vitro culture system for time-lapse cinematography (TLC), based on Payne et al. [13], to analyze the morphologically dynamic events occurring during early human embryonic development. This system enables non-invasive and continuous imaging of human oocyte fertilization and embryonic development.

Our previous dynamic analyses of the fertilization process in human oocytes and of human embryonic development using the in vitro TLC system [12] confirmed for the first time the detailed time course of sequential events during embryonic development and revealed novel phenomena [fertilization cone, cytoplasmic strand, and splitting of the

The ethics committee of the Japanese Institution for Standardizing ART (JISART) approved our study protocol.

Results

Of the 22 imaged oocytes, in which penetration into the ZP and attachment to the oocyte membrane of the leading sperm were confirmed, the leading sperm attached to the oocyte membrane within an average of 96 min after insemination, and the sperm head disappeared an average of 37 min after attachment of the sperm to the oocyte membrane. There was no difference in the time course of the fertilization process between the three oocytes subsequently chosen to analyze the mechanism for prevention of polyspermy and the remaining 19 oocytes.

Figure 2 shows the results of analyzing each TLC frame of the selected oocytes (Oocyte 1, 2 and 3), in which the following sperm penetrated the ZP together with the leading sperm. Penetration of the following sperm into the ZP was arrested within 10 s after the leading sperm attached to the oocyte membrane, even though the tail of the following sperm was still actively moving in all three oocytes (Fig. 2). Additional data are given in Supplementary Movies 2 to 4 (Online Resource 2 to 4).

Next, we analyzed the time course of the distance that the leading and following sperms traveled in the ZP (Fig. 3). The following sperm traveled at a similar velocity to the leading sperm, until the leading sperm attached to the oocyte membrane after penetrating the ZP. However, once the leading sperm reached the oocyte membrane across the perivitelline space, the following sperm immediately ceased further penetration, within 10 s. The behaviors of the leading and following sperm were identical among the three oocytes.

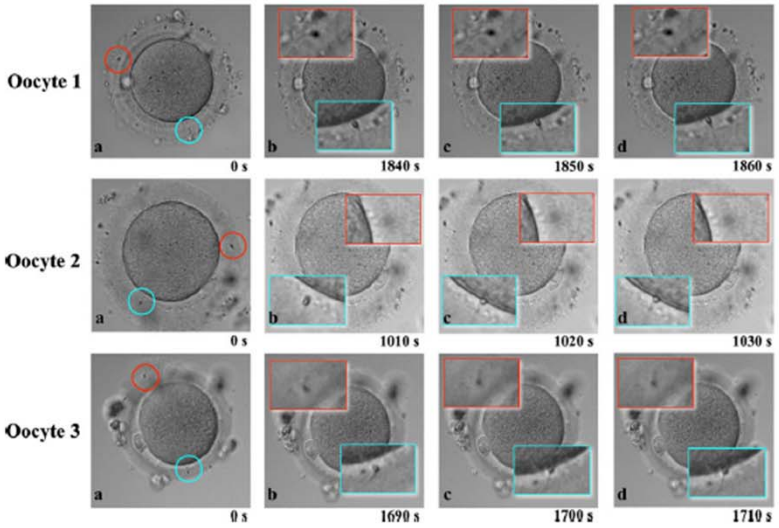


Fig. 2 Dynamics of the leading sperm and following sperm. The sperm fertilizing the oocyte (leading sperm) is indicated by a *blue circle*, while the sperm following the fertilizing sperm (following sperm) is indicated by a *red circle* among three oocytes (a). Sections of the images containing both leading and following sperms were magnified to facilitate observation of the process (b, c, d). The images were acquired in 10-s intervals. With regard to oocyte 1 shown in the upper panel, both the leading and following sperm penetrated into the zona pellucida from the beginning of imaging to shortly prior to the attachment of the leading sperm to the oocyte membrane (a, b). The leading sperm attached to the oocyte membrane 1,850 s (30.8 min) after the beginning of imaging (c), and the penetration of the following sperm was inhibited at 1,860 s (d), which is within 10 s after the attachment of the leading sperm to the oocyte membrane. With regard to oocyte 2 shown in the middle panel and oocyte 3 shown in the lower panel, the penetration of the following sperm was also inhibited within 10 s after the attachment of the leading sperm to the oocyte membrane (c, d)

Supplementary Video에 Component DOI 부여

PLoS One. 2011; 6(9): e23964. PMCID: PMC3174941
Published online 2011 September 16. doi: 10.1371/journal.pone.0023964

DRhoGEF2 Regulates Cellular Tension and Cell Pulsations in the *Amnioserosa* during *Drosophila* Dorsal Closure

Dulce Azevedo,[1] Marco Antunes,[1] Soren Prag,[1] Xiaoyan Ma,[2] Udo Hacker,[3] G. Wayne Brodland,[4] M. Shane Hutson,[2] Jerome Solon,[5] and Antonio Jacinto[1,6,*]

Cara Gottardi, Editor

Abstract

Coordination of apical constriction in epithelial sheets is a fundamental process during embryogenesis. Here, we show that DRhoGEF2 is a key regulator of apical pulsation and constriction of amnioserosal cells during *Drosophila* dorsal closure. Amnioserosal cells mutant for DRhoGEF2 exhibit a consistent decrease in amplitude of pulsations whereas overexpression ...

...ence was estimated ... average ... density of sqn-mediated ... in the selected area.

Supporting Information

Movie S1

AS cell pulsations in the WT. A short movie of an *UbiCadh-GFP,c381Gal4* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsate. The total elapsed time is 37 min and the frame rate is 30 s/frame.

(MOV)

Click here for additional data file. (1.2M, mov)

Movie S2

AS cell pulsations in DRhoGEF2 maternal mutants. A short movie of an *UbiCadh-GFP/DRhoGEF2$^{l(2)04291}$* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsation is diminished compared to the WT. The total elapsed time is 37 min and the frame rate is 30 s/frame.

(MOV)

Click here for additional data file. (755K, mov)

Movie S3

AS cell pulsations upon DRhoGEF2 overexpression. A short movie of an *UbiCadh-GFP,c381Gal4/UAS-DRhoGEF2* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsate with a different behavior compared to the WT. The total elapsed time is 37 min and the frame rate is 30 s/frame.

(MOV)

Click here for additional data file. (1.1M, mov)

Movie S4

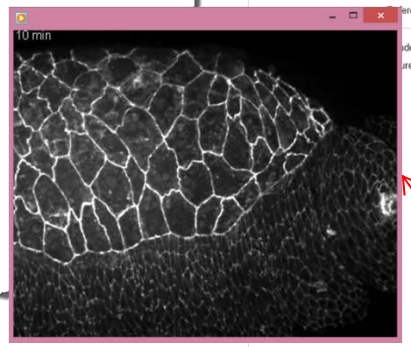
Germ-band retraction in WT. Movie of an *UbiCadh-GFP,c381Gal4* embryo imaged using time-lapse confocal microscopy showing germ-band retraction and beginning of DC. The total elapsed time is 300 min and the frame rate is 10 min/frame.

(MOV)

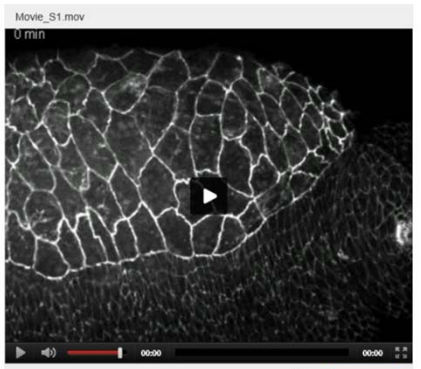
Click here for additional data file. (435K, mov)

Movie S5

Germ-band retraction in DRhoGEF2 maternal mutants. Movie of an *UbiCadh-GFP/DRhoGEF2$^{l(2)04291}$* embryo imaged using time-lapse confocal microscopy showing



DRhoGEF2 Regulates Cellular Tension and Cell Pulsations in the *Amnioserosa* during *Drosophila* Dorsal Closure



Movie S1.
AS cell pulsations in the WT. A short movie of an *UbiCadh-GFP,c381Gal4* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsate. The total elapsed time is 37 min and the frame rate is 30 s/frame.
doi:10.1371/journal.pone.0023964.s001
(MOV)

Movie S2.
AS cell pulsations in DRhoGEF2 maternal mutants. A short movie of an *UbiCadh-GFP/DRhoGEF2$^{l(2)04291}$* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsation is diminished compared to the WT. The total elapsed time is 37 min and the frame rate is 30 s/frame.

II activity, or expression of a constitutively active form of the formin Diaphanous (Dia^{CA}) that stimulates actin polymerization, exhibited precocious cell contraction through changes in the subcellular localization of myosin II, demonstrating the role of these Rho1 effectors in the regulation of AS cell pulsations [16].

The upstream regulator of the Rho signalling pathway, RhoGEF2, was initially characterised as a regulator of apical constriction during formation of the ventral furrow [17,18,19] and has subsequently been shown to coordinate contractile forces throughout morphogenesis in *Drosophila* by regulating the association of myosin II with actin to form contractile cables [20]. Here, we show for the first time that DRhoGEF2 plays a crucial role in AS apical constriction through the regulation of myosin II subcellular localization and control of the AS cells pulsating behaviour upstream of Rho signalling.

Results

1. DRhoGEF2 plays a role in Dorsal Closure

DRhoGEF2 has been shown to be expressed in AS cells [20] but the analysis of the function of DRhoGEF2 during dorsal closure has been precluded by its earlier role during gastrulation. We started by confirming that DRhoGEF2 is indeed localized at the right place and time to play a role in dorsal closure. In wild-type (WT) embryos, DRhoGEF2 protein accumulates along the leading edge of the dorsal-most epidermal cells and apically in AS cells (Fig. 1A). DRhoGEF2 localization in AS cells is increased cortically (Fig. 1A C, the outlines of the cells are marked by Armadillo).

To investigate whether DRhoGEF2 regulates apical constriction of AS cells during dorsal closure we took loss and gain of function approaches. *DRhoGEF2* maternal zygotic mutants showed significant changes of key components of the contractile machinery; myosin II was clearly reduced (Fig. 1G) and F-actin was more disorganised (Fig. 1H) in the AS cells when compared to WT (Fig. 1 D F). However, as DRhoGEF2 plays an important role during gastrulation [17,18], it was difficult to find embryos reaching dorsal closure stages, and the few that did were too abnormal for a more detailed analysis. To get around this limitation we used maternal mutants in which there is a paternal rescue allowing us to obtain embryos with reduced DRhoGEF2 function for analysing cell shape and dynamics. When stained for Arm to mark cell outlines (Fig. 1I), these *DRhoGEF2* maternal mutant embryos showed several tissue organization defects in the epithelial cells and in the AS. The leading edge of the dorsal-most epithelial mutant cells was irregular, in contrast to the WT (compare Fig. 1I with 1B). In the WT, all central AS cells showed similar exposed apical surface areas (Fig. 1B), whereas in the mutant, neighbouring AS cells presented very different apical areas (see arrows in Fig. 1I). In contrast to the mutant, overexpression of DRhoGEF2 in AS cells resulted in increased levels of myosin II and F-actin (compare Fig. 1J with 1D and Fig. 1K with 1E).

2. Cellular tension is affected in DRhoGEF2 mutants

In order to test whether DRhoGEF2 activity has a direct impact on tissue mechanics we assessed the cellular tension of the AS by performing a series of hole drilling experiments in embryos with reduced or increased DRhoGEF2 activity. We laser ablated a subcellular cylindrical hole through WT AS cells and we tracked the subsequent recoil of adjacent cells in order to calculate recoil parameters that allow us to evaluate cellular tension (see Fig. 2 (A L) and Materials and Methods, [11]). The mean initial recoil velocity (v_0), determined via a linear fit to the first 100 ms of recoil, in the WT is 13.4±1.5 μm/s (Fig. 2M) whereas in the *DRhoGEF2* mutant it is 1.8±0.7 μm/s, which represents a decrease in the mutant of almost one order of magnitude, indicating that the mutant is under less tension and/or is more viscous. This result is in line with the value obtained for the coefficient D, calculated using a power-law fit to the first 5 s of recoil (Fig. 2M). The lower value obtained for the mean D in the mutant (0.23±0.09) is also an indication that the tissue is under less tension than the WT (1.34±0.07). The values of exponent α suggest that the mutant tissue may be more fluid than WT (0.633±0.232 *vs* 0.396±0.015).

The mean D and mean v_0 for WT and DRhoGEF2 overexpression is not significantly different (Fig. 2M, see also [11]), indicating that either the tension in DRhoGEF2 expressing cells is similar to WT or that an increase in tension is compensated by an increase in viscosity and stiffness. However, the variance of D is higher when overexpressing DRhoGEF2, consistent with a wider distribution of recoil displacements as shown in the respective graph (Fig. 2M, grey and yellow shadows). Interestingly the decrease in exponent α when DRhoGEF2 is overexpressed indicates a transition to a more solid-like tissue. Exponent α varies between 0 and 1 and lower values are characteristic of more solid materials [21]. Taken together, the results of the hole drilling experiments support the hypothesis that DRhoGEF2 regulates tissue tension in AS cells. In particular, the average tension in *DRhoGEF2* mutant cells seems to be lower than in WT, and the overexpression of *DRhoGEF2* results in a tissue that is less fluid and more solid-like.

3. DRhoGEF2 regulates AS pulsations

In order to find out whether DRhoGEF2 regulates AS pulsations, we investigated the dynamic behaviour of the AS cells in more detail by performing high speed time-lapse imaging with subcellular resolution (see Materials and Methods). The comparison of overall dorsal closure dynamics between WT and *DRhoGEF2* maternal zygotic mutants was not possible as the embryos with that genotype were extremely deformed. In *DRhoGEF2* maternal mutants, that were more amenable for time-lapse imaging, dorsal closure was slower than in WT but the phenotype was very variable (Fig. 3A B). When DRhoGEF2 was overexpressed specifically in AS cells dorsal closure also took longer to be completed but, as described above, the average apical surface of the AS cells was significantly smaller than WT and the AS seemed more densely packed (Fig. 3C). To quantify the dynamics of dorsal closure in the different genotypes, we focused on early dorsal closure stages, starting at stage 13. In the WT (Fig. 3A', Supplementary Movie S1), AS cells showed a cell pulsation period of 248±64 s, (Fig. 4B, upper graph) and an average cell area amplitude of 49±30 μm^2 (Fig. 4A, upper graph), consistent with what has been previously described [8]. The analysis of *DRhoGEF2* maternal mutants revealed that the pulsation phenotype is variable, ranging from cells with almost no pulsations to cases that showed very irregular oscillations (see representative examples in Fig. 3B' and Movie S2). In this case it was not possible to calculate a meaningful average period or amplitude, as the majority of the cells do not exhibit a clear periodic behaviour. Therefore, we conclude that DRhoGEF2 is required for AS cell pulsations.

In DRhoGEF2 overexpressing AS cells (Fig. 3C', Movie S3) the amplitude of pulsations is decreased to 26±13 μm^2 compared to 49±30 μm^2 in WT (Fig. 4A), and period, 387±119 s, is longer when compared to 248±64 s in WT (Fig. 4B). For this genotype the distribution of amplitudes is clearly skewed towards lower amplitudes, however, the distribution of the ratios amplitude/cell

Supporting Information

Movie S1 AS cell pulsations in the WT. A short movie of an *UbiCadh-GFP,c381Gal4* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsate. The total elapsed time is 37 min and the frame rate is 30 s/frame.
(MOV)

Movie S2 AS cell pulsations in DRhoGEF2 maternal mutants. A short movie of an *UbiCadh-GFP/DRhoGEF2^{k02104}* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsation is diminished compared to the WT. The total elapsed time is 37 min and the frame rate is 30 s/frame.
(MOV)

Movie S3 AS cell pulsations upon DRhoGEF2 overexpression. A short movie of an *UbiCadh-GFP,c381Gal4/UAS-DRhoGEF2* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note how AS cells pulsate with a different behavior compared to the WT. The total elapsed time is 37 min and the frame rate is 30 s/frame.
(MOV)

Movie S4 Germ-band retraction in WT. Movie of an *UbiCadh-GFP,c381Gal4* embryo imaged using time-lapse confocal microscopy showing germ-band retraction and beginning of DC. The total elapsed time is 300 min and the frame rate is 10 min/frame.
(MOV)

Movie S5 Germ-band retraction in DRhoGEF2 maternal mutants. Movie of an *UbiCadh-GFP/DRhoGEF2^{k02104}* embryo imaged using time-lapse confocal microscopy showing germ-band retraction. Note that some AS cells are bigger than WT. The total elapsed time is 500 min and the frame rate is 10 min/frame.
(MOV)

Movie S6 Germ-band retraction in upon DRhoGEF2 overexpression. Movie of an *UbiCadh-GFP,c381Gal4/UAS-DRhoGEF2* embryo imaged using time-lapse confocal microscopy showing germ-band retraction. Note that AS cells acquire a rounder shape from the beginning of germ-band retraction. The total elapsed time is 500 min and the frame rate is 10 min/frame.
(MOV)

Movie S7 Myosin coalescence in WT. A short movie of an *UbiCadh-GFP/Sqh-mCherry,c381Gal4* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note that Myosin II coalescence is correlated with cell deformations. The total elapsed time is 1250 sec and the frame rate is 5 s/frame.
(MOV)

Movie S8 Myosin coalescence in DRhoGEF2 maternal mutants. A short movie of an *UbiCadh-GFP,Sqh-mCherry/DRhoGEF2^{k02104}* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note the absence of Myosin II coalescence. The total elapsed time is 800 sec and the frame rate is 5 s/frame.
(MOV)

Movie S9 Myosin coalescence upon DRhoGEF2 overexpression. A short movie of an *UbiCadh-GFP,UAS-DRhoGEF2/Sqh-mCherry,c381Gal4* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note that Myosin II coalescence is more intense. The total elapsed time is 1185 sec and the frame rate is 5 s/frame.
(MOV)

Movie S10 Rho1 activity upon DRhoGEF2 overexpression. A short movie of an *c381Gal4/UAS-DRhoGEF2;UAS-PKNG58AeGFP* embryo imaged using time-lapse confocal microscopy showing an early stage of dorsal closure. Note that Rho1 activity is correlated with AS cells pulsation. The total elapsed time is 30 min and the frame rate is 30 s/frame.
(MOV)

Acknowledgments

We thank Damian Brunner and Alfonso Martinez Arias for insightful discussions, Isabel Campos and Lara Carvalho for critically reading the manuscript. We acknowledge Dan Kiehart and Steve Rogers for reagents and fly stocks, José Rino and António Temudo for microscopy assistance, and Inês Matos and Ângela Dias for fly maintenance.

Author Contributions

Performed the experiments: DA MA XM . Analyzed the data: DA MA SP XM MSH JS AJ. Contributed reagents/materials/analysis tools: UH GWB. Wrote the paper: DA MA SP MSH JS AJ.

References

1. Gates J, Peifer M (2005) Can 1000 reviews be wrong? Actin, alpha-Catenin, and adherens junctions. Cell 123: 769-772.
2. Halbleib JM, Nelson WJ (2006) Cadherins in development: cell adhesion, sorting, and tissue morphogenesis. Genes & Dev 20: 3199-3214.
3. Sawyer JK, Harris NJ, Slep KC, Gaul U, Peifer M (2009) The Drosophila afadin homologue Canoe regulates linkage of the actin cytoskeleton to adherens junctions during apical constriction. J Cell Biol 186: 57-73.
4. Martin AC (2010) Pulsation and stabilization: contractile forces that underlie morphogenesis. Dev Biol 341: 114-125.
5. Kiehart DP, Galbraith CG, Edwards KA, Rickoll WL, Montague RA (2000) Multiple forces contribute to cell sheet morphogenesis for dorsal closure in Drosophila. J Cell Biol 149: 471-490.
6. Hutson MS, Tokutake Y, Chang MS, Bloor JW, Venakides S, et al. (2003) Forces for Morphogenesis Investigated with Laser Microsurgery and Quantitative Modeling. Science.
7. Young PE, Richman AM, Ketchum AS, Kiehart DP (1993) Morphogenesis in Drosophila requires nonmuscle myosin heavy chain function. Genes & Dev 7: 29-41.
8. Solon J, Kaya-Copur A, Colombelli J, Brunner D (2009) Pulsed forces timed by a ratchet-like mechanism drive directed tissue movement during dorsal closure. Cell 137: 1331-1342.
9. Jacinto A, Wood W, Balayo T, Turmaine M, Martinez-Arias A, et al. (2000) Dynamic actin-based epithelial adhesion and cell matching during Drosophila dorsal closure. Curr Biol 10: 1420-1426.
10. Franke J, Montague R, Kiehart D (2005) Nonmuscle Myosin II Generates Forces that Transmit Tension and Drive Contraction in Multiple Tissues during Dorsal Closure. Curr Biol 15: 2208-2221.
11. Ma X, Lynch HE, Scully PC, Hutson MS (2009) Probing embryonic tissue mechanics with laser hole drilling. Physical Biology 6: 036004.
12. Gorfinkiel N, Blanchard GB, Adams RJ, Martinez Arias A (2009) Mechanical control of global cell behaviour during dorsal closure in Drosophila. Development 136: 1889-1898.
13. Martin AC, Kaschube M, Wieschaus EF (2009) Pulsed contractions of an actin-myosin network drive apical constriction. Nature 457: 495-499.
14. David DJ, Tishkina A, Harris TJ (2010) The PAR complex regulates pulsed actomyosin contractions during amnioserosa apical constriction in Drosophila. Development 137: 1645-1655.
15. Homem CC, Peifer M (2008) Diaphanous regulates myosin and adherens junctions to control cell contractility and protrusive behavior during morphogenesis. Development 135: 1005-1018.
16. Blanchard GB, Murugesu S, Adams RJ, Martinez-Arias A, Gorfinkiel N (2010) Cytoskeletal dynamics and supracellular organisation of cell shape fluctuations during dorsal closure. Development 137: 2743-2752.
17. Barrett K, Leptin M, Settleman J (1997) The Rho GTPase and a putative RhoGEF mediate a signaling pathway for the cell shape changes in Drosophila gastrulation. Cell 91: 905-915.
18. Hacker U, Perrimon N (1998) DRhoGEF2 encodes a member of the Dbl family of oncogenes and controls cell shape changes during gastrulation in Drosophila. Genes & Dev 12: 274-284.
19. Kölsch V, Seher T, Fernandez-Ballester GJ, Serrano L, Leptin M (2007) Control of Drosophila gastrulation by apical localization of adherens junctions and RhoGEF2. Science 315: 384-386.

NISO RP-15-2013

NISO RP-15-2013

Recommended Practices for Online Supplemental Journal Article Materials

January 2013

A Recommended Practice of the
National Information Standards Organization and
the National Federation of Advanced Information Services

A.3.8 Providing Context

Within the article, an in-text citation provides context for the Supplemental Material. However, it is important to provide context within or attached to both Integral Content and Additional Content. Readers can find these materials without navigating to them from the article. Even if readers navigate directly from the article to the content, they will benefit from a reminder about what they are seeing or hearing. Consequently, some indication of the nature of the content and its connection to the article to provide context are important. Including the following elements, either on a landing page or within the content itself, is recommended:

- Article citation and DOI
- Title of document and/or succinct statement about the content
- For multimedia files, a file extension and indication of size
- If there are multiple files, a list of all the relevant files
- Player information for multimedia
- DOIs or other identifiers for the Supplemental Materials if used

Although these elements can be contained in a ReadMe file, experience has proven that readers generally ignore them. Simple lists, as noted above, are generally more useful.

- 충분한 식별 정보 논문에 표기
  (제목, 요약, 파일 형식, meta data, DOI 등)
- 투고규정에 명시
- E-Journal platform에 user-friendly interface 구현
  (다양한 링크, interactive multimedia, 보조 자료 검색 기능)

Highlights

Required for papers published from January 2010 onward. Highlights are a short collection of bullet points that convey the core findings of the article. This list of points will be displayed online with the summary of the article but will not appear in print. Specifications: up to 4 bullet points can be included; the length of an individual bullet point should not exceed 85 characters (including spaces); only the core results of the paper should be covered.

Graphical Abstract

A graphical abstract should allow readers to quickly gain an understanding of the main take-home message of the paper and is intended to encourage browsing, promote interdisciplinary scholarship, and help readers identify more quickly which papers are most relevant to their research interests. Examples of this feature can be seen in the online version of articles published in *Cell* from January 2010 onwards. Graphical abstracts may be submitted at any stage but are only required once a paper has been accepted for publication (it is not necessary to provide a graphical abstract for a new submission). Graphical abstracts can be uploaded in EES by selecting "Graphical Abstract" when uploading files. Preparation guidelines: A graphical abstract should be one image and should not contain multiple panels; visualize one process or make one point clear; have a clear start and end, preferably 'reading' from top to bottom or left to right, for ease of browsing; try to reduce distracting and cluttering elements as much as possible; and provide a visual indication of the biological context of the results depicted (subcellular location, tissue or cell type, species, etc.). Simple labels are often useful. Please also try to avoid including features that are more speculative (unless the speculative nature can be made apparent visually), and highlight the new findings from the current paper without including excess details from previous literature. Specifications: the maximum size of the image should be 400 x 400 pixels, using Arial font with a size of 12–16 points. Preferred file types are .ai, .psd, and .eps; .jpg and .tif are also acceptable.

THE LANCET

Guidelines for web extra material

Audio/video material

- The paper to which the audio or video clip relates should be mentioned in the recording
- Audio clip and video files should be accompanied with brief text explaining the content of the audio, names of interviewers/interviewees, date of recording, and place of recording if relevant
- Written consent from all parties must be supplied at submission

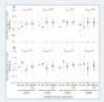
Audio

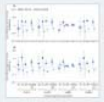
- Audio material submitted as an mp3 file, no larger than 50 Mb
- Your paper may be selected for a podcast. If so, the Web Editor will contact you to arrange a pre-recorded interview to discuss your paper. For more information, see Audio.

Video

- Video material should preferably be submitted in .mpg (or .mov, .avi, or .gif) format with aspect ratio of 16:9, no larger than 50 Mb
- We welcome your videos and invite you to submit any video material (reports, interviews, scans, imaging) for consideration in the online journal. Patient consent issues apply if there is a chance that the patient can be identified from either the article or accompanying video (see the above section on Patient and other consents).
- All video files can be submitted alongside your article in EES.

- 충분한 식별 정보 논문에 표기
  (제목, 요약, 파일 형식, meta data, DOI 등)
- 투고규정에 명시
- E-Journal platform에 user-friendly interface 구현
  (다양한 링크, interactive multimedia, 보조 자료 검색 기능)





THE LANCET

Volume 381, Issue 9884, 22–28 June 2013, Pages 2176–2183

Articles

Association of maternal vitamin D status during pregnancy with bone-mineral content in offspring: a prospective cohort study

Prof Debbie A Lawlor, PhD[a,b], Andrew K Wills, PhD[a,b], Abigail Fraser, PhD[a,b], Adrian Sayers, MSc[b], Prof William D Fraser, MD[d], Prof Jonathan H Tobias, PhD[c]

[a] MRC Centre for Causal Analyses in Translational Epidemiology, University of Bristol, Bristol UK
[b] School of Social and Community Medicine, University of Bristol, Bristol UK
[c] School of Clinical Sciences, University of Bristol, Bristol UK
[d] Norwich Medical School, University of East Anglia, Norwich, UK

Refers To Philip J Steer
Is vitamin D supplementation in pregnancy advisable?
The Lancet, Volume 381, Issue 9884, 22–28 June 2013, Pages 2143-2145
PDF (681 K)

Referred to by Nicholas C Harvey, M Kassim Javaid, Hazel M Inskip, Keith M Godfrey, Cyrus Cooper
Maternal vitamin D status during pregnancy and bone-mineral content in offspring
The Lancet, Volume 382, Issue 9894, 31 August–6 September 2013, Page 766
PDF (103 K)

Toshihiro Sugiyama
Maternal vitamin D status during pregnancy and bone-mineral content in offspring
The Lancet, Volume 382, Issue 9894, 31 August–6 September 2013, Page 767
PDF (40 K)

Debbie A Lawlor, Andrew K Wills, Abigail Fraser, William D Fraser, Jonathan H Tobias
Maternal vitamin D status during pregnancy and bone-mineral content in offspring – Authors' reply
The Lancet, Volume 382, Issue 9894, 31 August–6 September 2013, Pages 767-768
PDF (111 K)

Department of Error
The Lancet, Volume 382, Issue 9893, 24–30 August 2013, Page 684
PDF (143 K)

Philip J Steer
Is vitamin D supplementation in pregnancy advisable?
The Lancet, Volume 381, Issue 9884, 22–28 June 2013, Pages 2143-2145
PDF (681 K)

Department of Error
The Lancet, Volume 381, Issue 9884, 22–28 June 2013, Page 2166
PDF (42 K)

Open Access

Summary

Background

Maternal vitamin D status in pregnancy is a suggested determinant of bone-mineral content (BMC) in offspring, but has been assessed in small studies. We investigated this association in a large prospective study.

Methods

Eligible participants were mother-and-singleton-offspring pairs who had participated in the Avon Longitudinal Study of Parents and Children, and in which the mother had recorded measurements of 25 (OH)D concentration in pregnancy and the offspring had undergone dual-energy x-ray absorptiometry at age 9–10 years. 25(OH)D concentrations in pregnancy were assessed per 10·0 nmol/L and classified as

http://dx.doi.org/10.1016/S0140-6736(12)62203-X

Supplementary video. Professor Debbie Lawlor reports on the association of maternal vitamin D status in pregnancy with bone-mineral content in offspring, and discusses the implications for current clinical guidelines.

View in article
Download video (18072 K)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Genomic and Epigenomic Landscapes of Adult De Novo Acute Myeloid Leukemia

The Cancer Genome Atlas Research Network

May 1, 2013 | DOI: 10.1056/NEJMoa1301689

Comments open through May 8, 2013

Share:

BACKGROUND

Many mutations that contribute to the pathogenesis of acute myeloid leukemia (AML) are undefined. The relationships between patterns of mutations and epigenetic phenotypes are not yet clear.

Full Text of Background...

METHODS

We analyzed the genomes of 200 clinically annotated adult cases of de novo AML, using either whole-genome sequencing (50 cases) or whole-exome sequencing (150 cases), along with RNA and microRNA sequencing and DNA-methylation analysis.

Full Text of Methods...

RESULTS

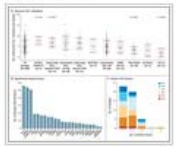
AML genomes have fewer mutations than most other adult cancers, with an average of only 13 mutations found in genes. Of these, an average of 5 are in genes that are recurrently mutated in AML. A total of 23 genes were significantly mutated, and another 237 were mutated in two or more samples. Nearly all samples had at least 1 nonsynonymous mutation in one of nine categories of genes that are almost certainly relevant for pathogenesis, including transcription-factor fusions (18% of cases), the gene encoding nucleophosmin (*NPM1*) (27%), tumor-suppressor genes (16%), DNA-methylation–related genes (44%), signaling genes (59%), chromatin-modifying genes (30%), myeloid transcription-factor genes (22%), cohesin-complex genes (13%), and spliceosome-complex genes (14%).

MEDIA IN THIS ARTICLE

Video

Acute Myeloid Leukemia (AML).

FIGURE 1



Characterization of Mutations.

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Abundance Is Not Enough: The Need for Multiple Lines of Evidence in Testing for Ecological Stability in the Fossil Record

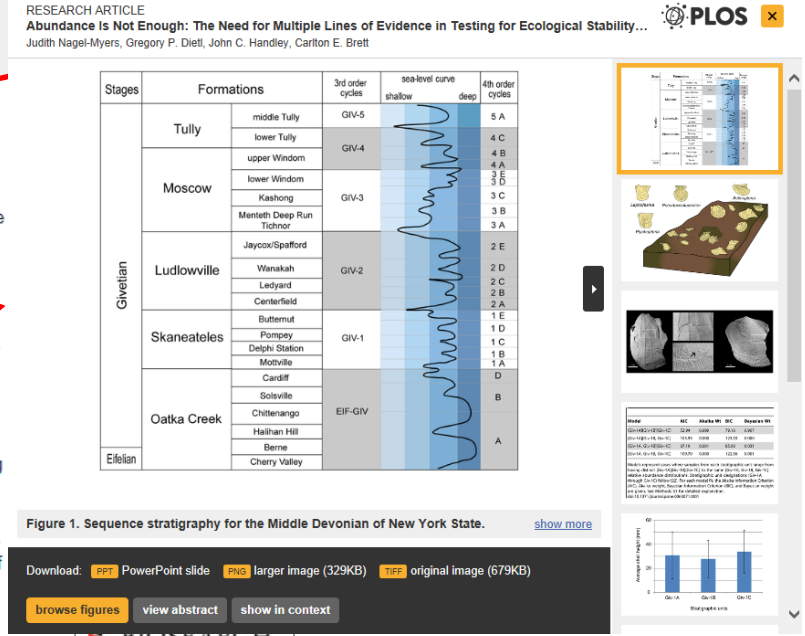
Judith Nagel-Myers, Gregory P. Dietl, John C. Handley, Carlton E. Brett

Hide Figures

Abstract

The fossil record is the only source of information on the long-term dynamics of species assemblages. Here we assess the degree of ecological stability of the epifaunal pterioid bivalve assemblage (EPBA), which is part of the Middle Devonian Hamilton fauna of New York—the type example of the pattern of coordinated stasis, in which long intervals of faunal persistence are terminated by turnover events induced by environmental change. Previous studies have used changes in abundance structure within specific biofacies as evidence for a lack of ecological stability of the Hamilton fauna. By comparing data on relative abundance, body size, and predation, indexed as the frequency of unsuccessful shell-crushing attacks, of the EPBA, we show that abundance structure varied through time, but body-size structure and predation pressure remained relatively stable. We suggest that the energetic set-up of the Hamilton fauna's food web was able to accommodate changes in species attributes, such as fluctuating prey abundances. Ecological redundancy in prey resources, adaptive foraging of shell-crushing predators (arising from predator behavioral or adaptive switching in prey selection in response to changing prey abundances), and allometric scaling of predator-prey interactions are discussed as potential stabilizing factors contributing to the persistence of the Hamilton fauna's EPBA. Our study underscores the value and importance of multiple lines of evidence in tests of ecological stability in the fossil record.

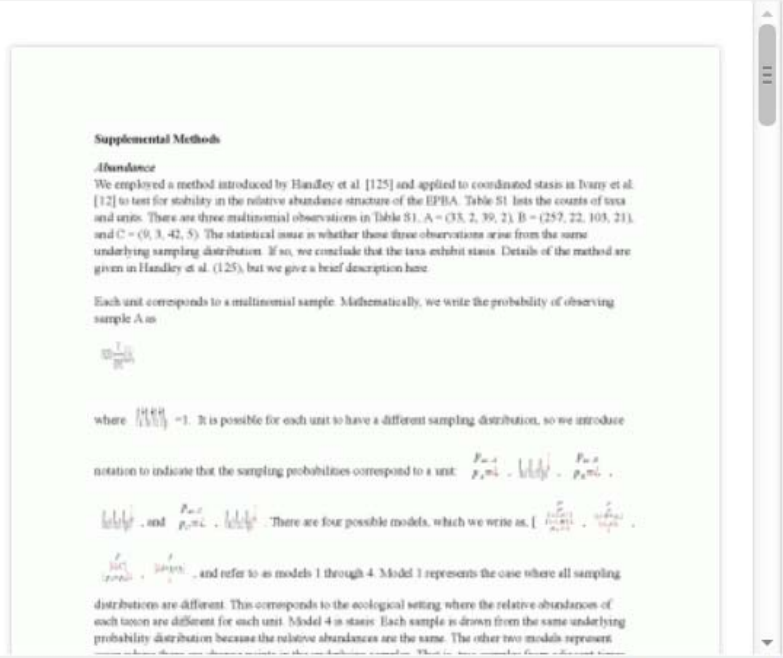
Citation: Nagel-Myers J, Dietl GP, Handley JC, Brett CE (2013) Abundance Is Not Enough: The



PLOS

Supporting Information

Methods_S1.docx



Supplemental Methods

Abundance

We employed a method introduced by Handley et al. [125] and applied to coordinated stasis in Ivany et al. [12] to test for stability in the relative abundance structure of the EPBA. Table S1 lists the counts of taxa and units. There are three multinomial observations in Table S1. A = (33, 2, 39, 2), B = (257, 22, 103, 21), and C = (9, 3, 42, 5). The statistical issue is whether these three observations arise from the same underlying sampling distribution. If so, we conclude that the taxa exhibit stasis. Details of the method are given in Handley et al. (125), but we give a brief description here.

Each unit corresponds to a multinomial sample. Mathematically, we write the probability of observing sample A as

$$\frac{\Gamma(\sum_i a_i + 1)}{\prod_i \Gamma(a_i + 1)} \prod_i p_i^{a_i}$$

where $\sum_i p_i = 1$. It is possible for each unit to have a different sampling distribution, so we introduce notation to indicate that the sampling probabilities correspond to a unit: $p_{u,i}$. $p_{1,1}, p_{1,2}, p_{1,3}, p_{1,4}$ and $p_{u,i}$. $p_{2,1}, p_{2,2}, p_{2,3}, p_{2,4}$. There are four possible models, which we write as, $\prod_{u=1}^{3} \prod_{i=1}^{4} p_{u,i}^{a_{u,i}}$, $\prod_{i=1}^{4} p_i^{\sum_u a_{u,i}}$, $\prod_{u=1}^{3} \prod_{i=1}^{4} p_i^{a_{u,i}}$, and refer to as models 1 through 4. Model 1 represents the case where all sampling distributions are different. This corresponds to the ecological setting where the relative abundances of each taxon are different for each unit. Model 4 is stasis. Each sample is drawn from the same underlying probability distribution because the relative abundances are the same. The other two models represent

figshare 1 / 5 download

Expanded explanation of statistical analyses.

Methods S1.
Expanded explanation of statistical analyses.
doi:10.1371/journal.pone.0063071.s001
(DOCX)

Table S1.
Relative abundance by taxon and stratigraphic unit.
doi:10.1371/journal.pone.0063071.s002
(XLSX)

Table S2.
Average size of specimens by taxon and stratigraphic unit.
doi:10.1371/journal.pone.0063071.s003
(XLSX)

Table S3.
Repair frequency by taxon and stratigraphic unit.
doi:10.1371/journal.pone.0063071.s004
(XLSX)

Proceedings of the National Academy of Sciences of the United States of America
PNAS

Prognostic microRNA/mRNA signature from the integrated analysis of patients with invasive breast cancer

Stefano Volinia[a,b] and Carlo M. Croce[a,1]
Author Affiliations

Contributed by Carlo M. Croce, March 15, 2013 (sent for review January 28, 2013)

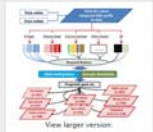


Fig. 1.

Strategy used to derive and validate prognostic mRNAs and miRNAs in breast cancer. mRNAs and miRNAs were integrated in a single 7982-RNA profile (TCGA IDC cohort, n = 466). Survival analysis was performed within the various subgroups of the following clinical and molecular classes: disease stage, lymph node involvement (N stage), surgical margin, pre- or postmenopause, intrinsic subtype, somatic mutations (*TP53*, PIK3CA pathway, *TP53*/PIK3CA double mutants, *GATA3*, and the remaining less frequently altered genes). The subclasses within a class represented disjoint patient sets, thus enabling immediate validation of the prognostic RNAs within that class. The HRs and Kaplan–Meier curve were generated for every RNA in all independent subclass. RNAs that had significant both HRs and log-rank tests ($P < 0.05$) in at least two subclasses (within the same clinical or molecular class) were initially selected. Additional criteria, required for the selection of coding genes, were the association of DNA methylation with OS and the presence of somatic mutations in the COSMIC database (www.sanger.ac.uk/genetics/CGP/cosmic). The association between DNA methylation and OS was carried out on the whole cohort (not on each subclass) using univariate Cox regression (*SI Appendix*, Tables S2 and S3). The HR was the ratio of hazards for a twofold change in the DNA methylation level. A majority-rule voting procedure was applied to all significant HRs for the CpG sites in the prognostic genes (false discovery rate < 0.001), e.g., the DNA methylation of a gene with the most significant CpG HRs lower than 1 would be defined as negatively correlated to outcome or vice versa. A further step for gene reassessment was then performed in the BC tumor subtype, as detailed in *Results*. Eight independent validation cohorts (total n = 2,399) were used to evaluate the prognostic miRNA/mRNA signature generated in the TCGA IDC cohort.

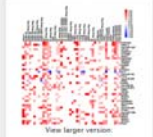


Fig. 2.

mRNAs and miRNAs associated with prognosis in different clinical and molecular subclasses of invasive ductal carcinoma (TCGA cohort). The matrix visualizes the significant HRs for the 30 mRNAs and seven miRNAs in the TCGA IDC cohort (listed in *SI Appendix*, Table S5). The HRs for expression with significant univariate Cox regression ($P < 0.05$) are displayed on a $\log_2$ scale. Red squares indicate HRs >1 and blue squares indicate HRs <1.

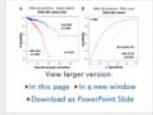


Fig. 3.

Kaplan–Meier and ROC curves for the integrated miRNA/mRNA signature (TCGA IDC cohort). (*A*) The cross-validated Kaplan–Meier curves for IDC risk groups obtained from the TCGA cohort (n = 466), using the integrated signature ("RNA model"). The permutation P value of the log-rank test between risk groups ($P < 0.001$) was based on 1,000 permutations. (*B*) The ROC curve had an AUC of 0.74 ($P < 0.001$). The permutation P value was computed for testing the null hypothesis (AUC = 0.5) using 1,000 permutations.

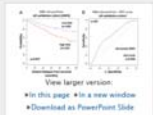


Fig. 4.

Kaplan–Meier and ROC curves for the integrated miRNA/mRNA signature in the UK validation cohort. (*A*) The cross-validated Kaplan–Meier curves for breast cancer risk groups obtained from the validation cohort (n = 207), using the prognostic integrated signature. The permutation P value of the log-rank test between risk groups ($P = 0.007$) was based on 1,000 permutations. (*B*) The ROC curve had an AUC of 0.65 ($P = 0.004$). The permutation P value was computed for testing the null hypothesis (AUC = 0.5) using 1,000 permutations.

Access
Abstract
Full Text (HTML)
Full Text (PDF)
Full Text + SI (Combined PDF)
Figures Only
Supporting Information
Figures
Article Tools
Other Articles

Proceedings of the National Academy of Sciences of the United States of America
PNAS

Prognostic microRNA/mRNA signature from the integrated analysis of patients with invasive breast cancer
Supporting Information

Files in this Data Supplement:

Download Appendix (PDF)
Download Dataset_S01 (XLS)
Download Dataset_S02 (XLS)
Download Dataset_S03 (XLSX)
Download Dataset_S04 (TXT)

Current Issue
E-mail Alerts
Subscribe
RSS

Published online before print April 15, 2013, doi: 10.1073/pnas.1304977110
PNAS **April 30, 2013** vol. 110 no. 18 7413-7417

Access
Abstract
Full Text (HTML)
Full Text (PDF)
Full Text + SI (Combined PDF)
Figures Only
Supporting Information

MOST READ | MOST CITED

1. Penis size interacts with body shape and height to influence male attractiveness
2. Private traits and attributes are predictable from digital records of human behavior
3. Synthesis of customized petroleum-replica fuel molecules by targeted modification of free fatty acid pools in Escherichia coli

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Serines in the Intracellular Tail of Podoplanin (PDPN) Regulate Cell Motility

Supplemental Data

Files in this Data Supplement:

- Supplemental Figure Legends (.pdf, 73 KB) - Supplemental Figure Legends
- Supplemental Figure 1a (.mpg, 2.3 MB) - Movement of homozygous null Pdpn knockout cells (PdpnKo cells) transfected with empty parental vector (EF4) recorded by video microscopy for 18 hours.
- Supplemental Figure 1b (.mpg, 3.8 MB) - Movement of homozygous null Pdpn knockout cells (PdpnKo cells) transfected with wild type Pdpn (WT) recorded by video microscopy for 18 hours.
- Supplemental Figure 1c (.mpg, 3.6 MB) - Movement of homozygous null Pdpn knockout cells (PdpnKo cells) transfected with Pdpn with both intracellular serines mutated to alanine (AA)recorded by video microscopy for 18 hours.
- Supplemental Figure 1d (.mpg, 3.6 MB) - Movement of homozygous null Pdpn knockout cells (PdpnKo cells) transfected with Pdpn with both intracellular serines mutated to aspartate (DD) recorded by video microscopy for 18 hours.
- Supplemental Figure 2 (.jpg, 7.2 MB) - Wound healing experiments were performed on confluent monolayers of PdpnWT cells treated with the PKA agonist 8-Br-cAMP or PKA inhibitor H-89 as indicated. Cells were photographed at 0 hours and 18 hours after wounding.
- Supplemental Figure 3a (.mpg, 7.2 MB) - Movement of DiI labeled B16 melanoma cells cocultured with unlabeled B16 cells recorded by video microscopy for 36 hours.
- Supplemental Figure 3b (.mpg, 7.2 MB) - Movement of DiI labeled B16 melanoma cells cocultured with homozygous null Pdpn knockout cells (PdpnKo cells) transfected with wild type Pdpn (WT) recorded by video microscopy for 36 hours.
- Supplemental Figure 3c (.mpg, 7.5 MB) - Movement of DiI labeled B16 melanoma cells cocultured with homozygous null Pdpn knockout cells (PdpnKo cells) transfected with empty parental vector (EF4) recorded by video microscopy for 36 hours.
- Supplemental Figure 3d (.mpg, 7.1 MB) - Movement of DiI labeled B16 melanoma cells cocultured with homozygous null Pdpn knockout cells (PdpnKo cells) transfected with phosphomimetic Pdpn (DD) recorded by video microscopy for 36 hours.

This Article

First Published on March 25, 2013, doi: 10.1074/jbc.C112.446823

JBC April 26, 2013 vol. 288 no. 17 12215–12221

Abstract
Full Text
Full Text (PDF)
PDF including Supp Data
» Supplemental Data

This Week's Issue

May 10, 2013, 288 (19)

Alert me to new issues of JBC

Authors
Submit
Subscribers
Editorial Board
Editorial policies
Podcasts
Videos

Alerts & feeds
E-mail
RSS
Twitter

Wiley Online Library

Journal of the American Heart Association
OPEN ACCESS
American Heart Association | American Stroke Association

Original Research

Heart Failure

Mechanical Unloading Activates FoxO3 to Trigger Bnip3–Dependent Cardiomyocyte Atrophy

Dian J. Cao, MD, PhD; Nan Jiang, MS; Andrew Blagg, PhD; Janet L. Johnstone, BS; Raj Gondalia, MD; Misook Oh, PhD; Xiang Luo, PhD; Kai-Chun Yang, MD; John M. Shelton, BS; Beverly A. Rothermel, PhD; Thomas G. Gillette, PhD; Gerald W. Dorn, MD; Joseph A. Hill, MD, PhD

Author Affiliations

Correspondence to:
Joseph A. Hill, MD, PhD, Division of Cardiology, UT Southwestern Medical Center, NB11.200, 6000 Harry Hines Blvd, Dallas, TX 75390-8573. E-mail: joseph.hill@utsouthwestern.edu

« Prev Article | Next Article »
Table of Contents

This Article

J Am Heart Assoc. 2013;2:e000016
originally published April 8, 2013,
doi: 10.1161/JAHA.113.000016

• Abstract
• » Figures Only
• Full Text
• PDF
• Data Supplement

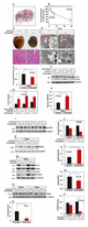
Classifications
Original Research
Heart Failure

Services
• E-mail this article to a friend
• Alert me when this article is cited
• Alert me if a correction is posted
• Alert me when comments are published
• Similar articles in this journal
• Similar articles in PubMed
• Download to citation manager
• Reuse of JAHA Content

Comments
Google Scholar
PubMed
Social Bookmarking

Current Issue
April 24, 2013

Alert me to JAHA's latest content »
About JAHA
Instructions for Authors
Online Submission/Peer Review
Editorial Office
Follow us on:
Advertiser Information
Open Access Information



View larger version:
» In this page » In a new window
» Download as PowerPoint Slide

Figure 1.

Mechanical unloading of the LV triggers FoxO3 activation and autophagy. A, Schematic diagram of heterotopic cardiac transplantation. B, Time course of cardiac atrophy after transplantation (n=3). C, Whole heart images of native and donor hearts, as well as hematoxylin and eosin–stained LV tissue sections, are shown. D, Increased autophagosome abundance in unloaded LV. E, Cardiomyocyte cross-sectional areas of representative control and unloaded heart pairs following 7 days of unloading, n=200 myocytes per sample from 2 hearts in each group. F and G, Increased LC3-II levels were observed in donor hearts after unloading. H, Beclin 1 protein levels were increased in unloaded LV (n=2). I and J, Phosphorylated FoxO3 and total FoxO3 from native and donor hearts after 4 days of unloading. K and L, Bnip3 levels from native and donor hearts after 4 days of unloading. n=3 to 6. M, Mitochondrial protein levels, including Cox1, VDAC, Cox4, and Mt ND1 in control and unloaded hearts 7 days after unloading. Experiments repeated 3 times with similar results. N, Mitochondrial DNA (mtDN2) copy number normalized to nuclear DNA (MX1) in control and unloaded hearts. O, TFAM protein levels in control and unloaded hearts at 2 and 4 days after unloading (n=3 for each group). P, Quantitative data from O. Q, Phosphorylated FoxO3 levels in failing human LV before and after VAD support, n=3. LV indicates left ventricle; HW, heart weight; Cox, cyclooxygenase; VDAC, voltage-dependent anion channel; mt ND1, mitochondrial NADH dehydrogenase 1; MX1, myxovirus resistance 1; TFAM, transcription factor A, mitochondrial; VAD, ventricular assist device; GAPDH, glyceraldehyde 3-phosphate dehydrogenase; HE, hematoxylin and

DONATE | HELP | CONTACT AHA | HOME

Journal of the American Heart Association
OPEN ACCESS
American Heart Association | American Stroke Association

Home • Open Access Information • Archives • Feedback • Authors • Help • AHA Journals Home

Search: Go Advanced Search

Mechanical Unloading Activates FoxO3 to Trigger Bnip3–Dependent Cardiomyocyte Atrophy

Data Supplement

This data supplement contains supporting information for this study.

Files in this Data Supplement:

- Appendix - Supplementary Information, Tables S1-S5 and Figures S1-S8. PDF, 1.3Mb

This Article

doi: 10.1161/JAHA.113.000016
JAHA April 24, 2013vol. 2no. 2

• Abstract
• Figures Only
• Full Text
• PDF
• » Data Supplement

Current Issue
April 24, 2013

Alert me to JAHA's latest content »
About JAHA
Instructions for Authors
Online Submission/Peer Review
Editorial Office
Follow us on:
Advertiser Information
Open Access Information

Common variants at 6p21.1 are associated with large artery atherosclerotic stroke.

(PMCID:PMC3651583)

Nat Genet. Author manuscript; available in PMC 2013 May 11.

Published in final edited form as:
Nat Genet. 2012 October; 44(10): 1147–1151.
Published online 2012 September 2. doi:†10.1038/ng.2397

PMCID: PMC3651583
NIHMSID: NIHMS457841

Common variants at 6p21.1 are associated with large artery atherosclerotic stroke

Elizabeth G Holliday,[1,2] Jane M Maguire,[3,4,5] Tiffany-Jane Evans,[2,6] Simon A Koblar,[7,8] Jim Jannes,[7,8] Jonathan W Sturm,[5,9] Graeme J Hankey,[10,11] Ross Baker,[12,13] Jonathan Golledge,[14,15] Mark W Parsons,[4] Rainer Malik,[16] Mark McEvoy,[1,9,17] Erik Biros,[14] Martin D Lewis,[7,18] Lisa F Lincz,[4,8,18] Roseanne Peel,[1,9,17] Christopher Oldmeadow,[9,20] Wayne Smith,[9,17] Pablo Moscato,[2,21] Simona Barlera,[22] Steve Bevan,[23] Joshua C Bis,[24] Eric Boerwinkle,[25,26] Giorgio B Boncoraglio,[27] Thomas G Brott,[28] Robert D Brown, Jr.,[29] Yu-Ching Cheng,[30] John W Cole,[31,32] Ioana Cotlarciuc,[33] William J Devan,[34,35,36] Myriam Fornage,[25,26] Karen L Furie,[37,38] StJlveig GrEtarsdUttir,[37] Andreas Gschwendtner,[16] M Arfan Ikram,[38,39,40] W T Longstreth, Jr.,[41,42,43] James F Meschia,[28] Braxton D Mitchell,[30] Thomas H Mosley,[44] Michael A Nalls,[45] Eugenio A Parati,[27] Bruce M Psaty,[24,41,46,47] Pankaj Sharma,[33] Kari Stefansson,[37,48] Gudmar Thorleifsson,[37] Unnur Thorsteinsdottir,[37,48] Matthew Traylor,[33] Benjamin F J Verhaaren,[38,40] Kerri L Wiggins,[24] Bradford B Worrall,[49] The Australian Stroke Genetics Collaborative,[50] The International Stroke Genetics Consortium,[50] The Wellcome Trust Case Control Consortium 2,[50] Cathie Sudlow,[51,52] Peter M Rothwell,[53] Martin Farrall,[54,55] Martin Dichgans,[16] Jonathan Rosand,[34,35,36] Hugh S Markus,[33] Rodney J Scott,[2,6,56,57] Christopher Levi,[4,57] and John Attia[1,2,57]

Author information ► Copyright and License information ►

Abstract

Go to:

Genome-wide association studies (GWAS) have not consistently detected replicable genetic risk factors for ischemic stroke, potentially due to etiological heterogeneity of this trait. We performed GWAS of ischemic stroke and a major ischemic stroke subtype (large artery atherosclerosis, LAA) using 1,162 ischemic stroke cases (including 421 LAA cases) and 1,244 population controls from Australia. Evidence for a genetic influence on ischemic stroke risk was detected, but this influence was higher and more significant for the LAA subtype. We identified a new LAA susceptibility locus on chromosome 6p21.1 (rs556621: odds ratio (OR) = 1.62, $P = 3.9 \times 10^{-8}$) and replicated this association in 1,715 LAA cases and 52,695 population controls from 10 independent population cohorts (meta-analysis replication OR = 1.15, $P = 3.9 \times 10^{-4}$; discovery and replication combined OR = 1.21, $P = 4.7 \times 10^{-8}$). This study identifies a genetic risk locus for LAA and shows how analyzing etiological subtypes may better identify genetic risk alleles for ischemic stroke.

eQTL analyses

For the lead SNP at 6p21.1 (rs556621), proxy SNPs with r^2 of >0.8 were identified from HapMap CEU Phases 1 and 2 (release 22) and 3 data (release 2) using SNAP (v2.2). Four publicly available eQTL databases were searched to determine whether genotypes of the lead or proxy SNPs have been previously associated with gene expression in *cis* in a range of tissue and cell types. We defined potential *cis* eQTLs as candidate SNPs associated with expression of a gene transcript mapping to a genomic region within 1 Mb[37] at a nominal significance level of 1×10^{-3}. The databases searched were (i) SCAN–SNP and CNV Annotation Database; (ii) the NCBI GTEx (Genotype-Tissue Expression) eQTL Browser; (iii) the Pritchard laboratory UChicago eQTL browser; and (iv) mRNA by SNP Browser v1.0.1. The tissue and cell types assessed in these databases include liver, brain, lymphoblastoid cell lines (LCLs), monocytes, fibroblasts and T cells.

Supplementary Material

Go to:

supplementary data and figures

Click here to view.(2.1M, pdf)

Acknowledgments

Go to:

A complete list of funding acknowledgments is included in the Supplementary Note. We are grateful to the participants with ischemic stroke and also to their families for participating in this study. Australian population control data were derived from the Hunter Community Study. We also thank the University of Newcastle for funding and the men and women of the Hunter region who participated in this study. This research was funded by grants from the Australian National Health and Medical Research Council (NHMRC; project grant 569257), the Australian National Heart Foundation (NHF; project grant G 04S 1623), the University of Newcastle, the Gladys M Brawn Fellowship scheme and the Vincent Fairfax Family Foundation in Australia. E.G.H. is supported by the Australian NHMRC Fellowship scheme. J.G. is supported by a Practitioner Fellowship from the NHMRC and a Senior Clinical Research Fellowship

Formats
Abstract
Full Text
PDF
Export citation (RIS)
Email citation

Journal and Issue
Journal List
NIHPA Author Manuscripts

BioEntities in Full Text
Genes/Proteins
APOL4 (3)
APOL2 (3)
APOL1 (2)
6 more...
Gene Ontology (GO)
chromosome (4)
binding (2)
transcription (2)
5 more...
Species
CNV (2)
primate (1)

Methodology article

Highly accessed | Open Access

Single cell transcriptomic analysis of prostate cancer cells

Christopher J Welty[1], Ilsa Coleman[2], Roger Coleman[2], Bryce Lakely[1], Jing Xia[2], Shu Chen[2], Roman Gulati[2], Sandy R Larson[2], Paul H Lange[1,2], Bruce Montgomery[5], Peter S Nelson[2,5], Robert L Vessella[1,2] and Colm Morrissey[1,2]*

* Corresponding author: Colm Morrissey cmorriss@uw.edu

Author Affiliations

[1] Department of Urology, University of Washington, Seattle, WA, USA

[2] Fred Hutchinson Cancer Research Center, Seattle, WA, USA

[3] Department of Veterans Affairs Medical Center, Seattle, WA, USA

[4] Department of Medicine, University of Washington, Seattle, WA, USA

[5] Genitourinary Cancer Research Laboratory, Department of Urology, University of Washington, Box 356510, Seattle, WA, 98195, USA

For all author emails, please log on.

BMC Molecular Biology 2013, **14**:6 doi:10.1186/1471-2199-14-6

The electronic version of this article is the complete one and can be found online at:
http://www.biomedcentral.com/1471-2199/14/6

Received: 7 September 2012
Accepted: 11 February 2013
Published: 16 February 2013

Abstract

Background

The ability to interrogate circulating tumor cells (CTC) and disseminated tumor cells (DTC) is restricted by the small number detected and isolated (typically <10). To determine if a commercially available technology could provide a transcriptomic profile of a single prostate cancer (PCa) cell, we clonally selected and cultured a single passage of cell cycle synchronized C4-2B PCa cells. Ten sets of single, 5-, or 10-cells were isolated using a micromanipulator under direct visualization with an inverted microscope. Additionally, two groups of 10 individual DTC, each isolated from bone marrow of 2 patients with metastatic PCa were obtained. RNA was amplified using the WT-Ovation™ One-Direct Amplification System. The amplified material was hybridized on a 44K Whole Human Gene Expression Microarray. A high stringency threshold, a mean Alexa Fluor® 3 signal intensity above 300, was used for gene detection. Relative expression levels were validated for select genes using real-time PCR (RT-qPCR).

Results

Using this approach, 22,410, 20,423, and 17,009 probes were positive on the arrays from 10-cell pools, 5-cell pools, and single-cells, respectively. The sensitivity and specificity of gene detection on the single-cell analyses were 0.739 and 0.972 respectively when compared to 10-cell pools, and 0.814 and 0.979 respectively when compared to 5-cell pools, demonstrating a low false positive rate. Among 10,000 randomly selected pairs of genes, the Pearson correlation coefficient was 0.875 between the single-cell and 5-cell pools and 0.783 between the single-cell and 10-cell pools. As expected, abundant transcripts in the 5- and 10-cell samples were detected by RT-qPCR in the single-cell isolates, while lower abundance messages were not. Using the same stringency, 16,039 probes were positive on the patient single-cell arrays. Cluster analysis showed that all 10 DTC grouped together within each patient.

Conclusions

A transcriptomic profile can be reliably obtained from a single cell using commercially available technology. As expected, fewer amplified genes are detected from a single-cell sample than from pooled-cell samples, however this method can be used to reliably obtain a transcriptomic profile from DTC isolated from the bone marrow of patients with PCa.

Keywords: Prostate cancer; Single-cell; Transcriptome; Disseminated tumor cells

Background

BMC Molecular Biology
Volume 14

Viewing options
Abstract
Full text
PDF (1.7MB)
Additional files

Associated material
PubMed record
About this article
Readers' comments

Related literature
Cited by
Google blog search
Other articles by authors
on Google Scholar
on PubMed
Related articles/pages
on Google
on Google Scholar
on PubMed

Tools
Download references
Download XML
Email to a friend
Order reprints
Post a comment

Share this article
Recommend 0
Tweet 1
+1 0
More options...

WEBINAR View this free webinar originally recorded on April 18th here on demand
Plant genomics: breeding opportunities out of challenges
View this Webinar
Sponsored by Affymetrix
BioMed Central The Open Access Publisher
ADVERTISEMENT

Log on
BioMed Central | Journals | Gateways

BMC Molecular Biology
IMPACT FACTOR 2.86

Search this journal for Go
Advanced search

Home | Articles | Authors | Reviewers | About this journal | My BMC Molecular Biology

Methodology article

Highly accessed | Open Access

Single cell transcriptomic analysis of prostate cancer cells

Christopher J Welty[1], Ilsa Coleman[2], Roger Coleman[2], Bryce Lakely[1], Jing Xia[2], Shu Chen[2], Roman Gulati[2], Sandy R Larson[2], Paul H Lange[1,2], Bruce Montgomery[5], Peter S Nelson[2,5], Robert L Vessella[1,2] and Colm Morrissey[1,2]*

* Corresponding author: Colm Morrissey cmorriss@uw.edu

For all author emails, please log on.

BMC Molecular Biology 2013, **14**:6 doi:10.1186/1471-2199-14-6

Published: 16 February 2013

Additional files

Additional file 1: Table S1:

Primer sequences, amplicon length, possible splice variants, 3′ bias, and primer specificity of the 10 genes examined by RT-qPCR in this study.

Format: PDF Size: 68KB Download file

This file can be viewed with: Adobe Acrobat Reader

OPEN DATA

Additional file 2: Table S2:

Quantitative RT-PCR of 4 housekeeping genes (ACTB, GAPDH, YWHAZ, and GAPDH) for each of the 10 single-, 5-, and 10-cell samples. * Indicates removed from analysis based on quality control. NTC = No template control; na = no amplification detected after 46 cycles; 10 pg and 100 pg represents C4-2B total RNA from the same original culture.

Format: PDF Size: 82KB Download file

This file can be viewed with: Adobe Acrobat Reader

OPEN DATA

Additional file 3: Table S3:

M ratio pair-wise correlation analysis for one cell. Based on the Dixon test for the correlation coefficients, the p-value for testing outliers is 0.457. Using p-value = 0.05 as cut-off. Array data: The microarray data for these experiments have been deposited in the Gene Expression Omnibus database (available at http://www.ncbi.nlm.nih.gov/geo website) under accession number GSE38416.

Format: PDF Size: 74KB Download file

This file can be viewed with: Adobe Acrobat Reader

OPEN DATA

Additional file 4: Table S4:

Gene Set Enrichment Analysis (GSEA) of single-, 5-, and 10-cell samples. GO = Gene Ontology; NES = Normalized Enrichment Score. The enrichment score reflects the degree to which the gene set is overrepresented at the extremes of the entire ranked list (n = 925).

Format: PDF Size: 136KB Download file

This file can be viewed with: Adobe Acrobat Reader

OPEN DATA

BMC Molecular Biology
Volume 14

Viewing options
Abstract
Full text
PDF (1.7MB)
Additional files

Associated material
PubMed record
About this article
Readers' comments

Related literature
Cited by
Google blog search
Other articles by authors
on Google Scholar
on PubMed
Related articles/pages
on Google
on Google Scholar
on PubMed

Tools
Download references
Download XML
Email to a friend
Order reprints
Post a comment

Share this article
Recommend 0
Tweet 1
+1 0
More options...

Cell, Volume 153, Issue 4, 731-736, 9 May 2013
doi:10.1016/j.cell.2013.04.027

Previous Article | Table of Contents | Next Article
Add/View Comments (0)

Article Information
PDF (412 kb)
Full Text with Large Figures
View a PowerPoint of all figures
Supplemental Data
Export Citation
Request permission

Commentary

Catalyzing Curriculum Evolution in Graduate

Johanna L. Gutlerner[1], and David Van Vactor[2],
[1] Department of Biological Chemistry and Molecular Pharmacol
[2] Department of Cell Biology, Harvard Medical School, Boston,
Corresponding author
Corresponding author

Summary

Strategies in life science graduate education must evolve in orc
Our institution has catalyzed such evolution through building a
education laboratory for innovation in graduate training.

Acknowledgments
Supplemental Information
References

Acknowledgments
Supplemental Information
References

Acknowledgments
Supplemental Information
References

MAIN TEXT

The modernization of science education requires a shift from a c
American Medical Colleges and Howard Hughes Medical Institu
Council, 2003, National Research Council, 2009). Such a curric
insurmountable task of presenting the complete breadth of an ever-expanding scientific knowledge base (D Avanzo, 2008). Concept-driven education is increasingly seen as fundamental for contemporary research scientists and physicians (Association of American Medical Colleges and Howard Hughes Medical Institute, 2009). An important complement to concept-driven education is the incorporation of skill-building curricula into STEM education

Cell Symposia | Press Room | Jobs | Webinars | Mobile
Cell
Home Online Now Current Issue Archive For Authors ▼ Journal Information ▼ Change Journal ▼

Cell, Volume 153, Issue 4, 731-736 9 May 2013
doi:10.1016/j.cell.2013.04.027

Catalyzing Curriculum Evolution in Graduate Science Education

Supplemental Data for Gutlerner et al.

Document S1. Sample Bootcamp Course Materials (PDF 333 kb)

Summary of this Article | Full Text of this Article

Supplemental Information

Document S1. Sample Bootcamp Course Materials (PDF 333 kb)

REFERENCES

Allen and Tanner, 2005 Allen, D., and Tanner, K. (2005). Cell Biol. Educ. *4*, 262–268. CrossRef | PubMed

American Association for the Advancement of Science, 2009 American Association for the Advancement of Science (2009). Vision and C
Biology Education: A Call to Action. http://visionandchange.org..

Association of American Medical Colleges and Howard Hughes Medical Institute, 2009 Association of American Medical Colleges and Ho
(2009). Scientific Foundations for Future Physicians: Report of the AAMC-HHMI Committee. (Washington, DC, and Chevy Chase, MD: A
and Medical Colleges). PubMed

Bentley et al., 2008 Bentley, A.M., Artavanis-Tsakonas, S., and Stanford, J.S. (2008). CBE Life Sci. Educ. *7*, 175–183. PubMed

Carnegie Institute for Advanced Study Commission on Mathematics and Science Education, 2009 Carnegie Institute for Advanced Study
and Science Education (2009). The Opportunity Equation: Transforming Mathematics and Science Education for Citizenship and the Glo
http://opportunityequation.org/..

Coil et al., 2010 Coil, D., Wenderoth, M.P., Cunningham, M., and Dirks, C. (2010). CBE Life Sci. Educ. *9*, 524–535. PubMed

D'Avanzo, 2008 D'Avanzo, C. (2008). BioScience *58*, 1079–1085. CrossRef | PubMed

DeSantis, 2012 DeSantis, N. (2012) Harvard and MIT Put $60-Million Into New Platform for Free Online Courses. http://chronicle.com/blo
mit-put-60-million-into-new-platform-for-free-online-courses/36284..

Feldon et al., 2011 Feldon, D.F., Peugh, J., Timmerman, B.E., Maher, M.A., Hurst, M., Strickland, D., Gilmore, J.A., and Stiegelmeyer, C.
1039. CrossRef | PubMed

Glass, 2007 Glass, D.J. (2007). Experimental Design for Biologists. (Cold Spring Harbor, New York: Cold Spring Harbor Laboratory Pres

Gross, 2000 Gross, L.J. (2000). Science *288*, 807–809. CrossRef | PubMed

Handelsman et al., 2004 Handelsman, J., Ebert-May, D., Beichner, R., Bruns, P., Chang, A., DeHaan, R., Gentile, J., Lauffer, S., Stewart
(2004). Science *304*, 521–522. CrossRef | PubMed

Handelsman et al., 2006 Handelsman, J., Miller, S., and Pfund, C. (2006). Scientific Teaching. (New York: W.H. Freeman and Company)

Lorsch and Nichols, 2011 Lorsch, J.R., and Nichols, D.G. (2011). Cell *146*, 506–509. Abstract | Full Text | PDF (253 kb) | CrossRef | Publ

Marbach-Ad et al., 2007 Marbach-Ad, G., Briken, V., Frauwirth, K., Gao, L.-Y., Hutcheson, S.W., Joseph, S.W., Mosser, D., Parent, B., S

Graphical Abstract

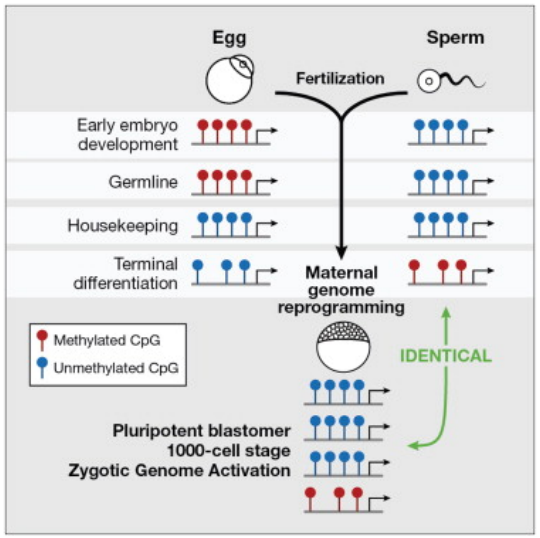


Figure options

View in workspace

Download full-size image

Download high-quality image (273 K)

Download as PowerPoint slide

Introduction

Fertilization involves the joining of parental gametes to create a totipotent zygote. A central issue in developmental biology is to understand how totipotency is established—the enabling of all developmental decisions. Developmental decisions are often made via collaboration between signaling factors, transcription/chromatin factors, and miRNAs, which need to be expressed at the proper time in early development, and avoid silencing by repressive chromatin and DNA methylation. One mechanism for transcriptional competence of developmental genes is their packaging in "bivalent" chromatin, bearing (simultaneously) histone modifications normally associated with transcriptional activity (i.e., H3K4me3) and silencing (H3K27me3), along with underlying DNA hypomethylation (Laurent et al., 2010; Lister et al., 2009; Zhou et al., 2011). Interestingly, in vertebrate sperm, the vast majority of developmental genes of importance in the early embryo are already packaged in bivalent chromatin (lacking DNA methylation), including virtually all HOX, SOX, FOX, TBX, PAX, CDX, and GATA family transcription factors (Arpanahi et al., 2009; Brykczynska et al., 2010; Farthing et al., 2008; Hammoud et al., 2009; Weber et al., 2007; Wu et al., 2011a). This raises important questions regarding the extent to which DNA methylation and chromatin structures important for totipotency are simply inherited or must be established or reestablished in the early embryo.

In mice, bulk DNA demethylation occurs at the one-cell stage, preferentially affects the male pronucleus (Hajkova et al., 2008; Mayer et al., 2000; Okada et al., 2010; Oswald et al., 2000), and likely involves a 5-hydroxymethylcytosine (5hmC) intermediate catalyzed by TET enzymes (Gu et al., 2011; Iqbal et al., 2011). Recent approaches with DNAme IP or reduced representation bisulphite sequencing (RRBS) reveal

Cell

Volume 153, Issue 4, 9 May 2013, Pages 747–758

Article

Betatrophin: A Hormone that Controls Pancreatic β Cell Proliferation

Peng Yi[1], Ji-Sun Park[1], Douglas A. Melton[1,] Corresponding author contact information, E-mail the corresponding author

[1] Department of Stem Cell and Regenerative Biology, Harvard Stem Cell Institute, Howard Hughes Medical Institute, Harvard University, 7 Divinity Avenue, Cambridge, MA 02138, USA

http://dx.doi.org/10.1016/j.cell.2013.04.008, How to Cite or Link Using DOI

- Betatrophin is a secreted protein expressed in liver and fat
- The increase in β cell replication and mass improves glycemic control

Summary

Replenishing insulin-producing pancreatic β cell mass will benefit both type I and type II diabetics. In adults, pancreatic β cells are generated primarily by self-duplication. We report on a mouse model of insulin resistance that induces dramatic pancreatic β cell proliferation and β cell mass expansion. Using this model, we identify a hormone, betatrophin, that is primarily expressed in liver and fat. Expression of betatrophin correlates with β cell proliferation in other mouse models of insulin resistance and during gestation. Transient expression of betatrophin in mouse liver significantly and specifically promotes pancreatic β cell proliferation, expands β cell mass, and improves glucose tolerance. Thus, betatrophin treatment could augment or replace insulin injections by increasing the number of endogenous insulin-producing cells in diabetics.

PaperClip

00:00 / 00:00

Help with MP3 files | Options

Professor Helen Lester our colleague, friend and co-author sadly passed away before the publication of this manuscript. Helen worked tirelessly throughout her career as a general practitioner and academic to address health inequalities, particularly in relation to severe mental illnesses. It was our privilege to work with Helen on the CRIMSON trial and to benefit from her passion, skills, and knowledge, particularly in relation to the qualitative aspects of this manuscript. She will be sorely missed.

Supplementary Material

PDF

Supplementary appendix.

Help with PDF files

Options

References

1 Department of Health
Reforming the Mental Health ActDepartment of Health (2000)

2 WHO
Mental Health Care Law: ten basic principlesDivision of Mental Health and Prevention of Substance Abuse,

with psychosis: a randomised controlled trial

The Lancet, Volume 381, Issue 9878, 11–17 May 2013, Pages 1634–1641
http://dx.doi.org/10.1016/S0140-6736(13)60105-1

CrossMark

Article history

Available online 26 March 2013

Export citation

Get Full Text Elsewhere

Epigenetic expansion of VHL-HIF signal output drives multiorgan metastasis in renal cancer

Sakari Vanharanta, Weiping Shu, Fabienne Brenet, A Ari Hakimi, Adriana Heguy, Agnes Viale, Victor E Reuter, James J-D Hsieh, Joseph M Scandura & Joan Massagué

Affiliations | Contributions | Corresponding author

Nature Medicine **19**, 50–56 (2013) | doi:10.1038/nm.3029

Received 19 April 2012 | Accepted 14 November 2012 | Published online 09 December 2012

Abstract

Inactivation of the von Hippel-Lindau tumor suppressor gene, *VHL*, is an archetypical tumor-initiating event in clear cell renal carcinoma (ccRCC) that leads to the activation of hypoxia-inducible transcription factors (HIFs). However, *VHL* mutation status in ccRCC is not correlated with clinical outcome. Here we show that during ccRCC progression, cancer cells exploit diverse epigenetic alterations to empower a branch of the VHL-HIF pathway for metastasis, and the strength of this activation is associated with poor clinical outcome. By analyzing metastatic subpopulations of VHL-deficient ccRCC cells, we discovered an epigenetically altered VHL-HIF response that is specific to metastatic ccRCC. Focusing on the two most prominent pro-metastatic VHL-HIF target genes, we show that loss of Polycomb repressive complex 2 (PRC2)-dependent histone H3 Lys27 trimethylation (H3K27me3) activates HIF-driven chemokine (C-X-C motif) receptor 4 (CXCR4) expression in support of chemotactic cell invasion, whereas loss of DNA methylation enables HIF-driven cytohesin 1 interacting protein (CYTIP) expression to protect cancer cells from death cytokine signals. Thus, metastasis in ccRCC is based on an epigenetically expanded output of the tumor-initiating pathway.

At a glance

Introduction

The drivers of metastasis in certain cancers include genes and pathways that are mechanistically independent of the oncogenic tumor-initiating mutations[1, 2, 3, 4]. In other cancers, however, the pathways driving carcinoma formation additionally mediate metastasis. One example of this alternative paradigm is ccRCC, a tumor type in which the VHL-HIF pathway mediates both tumor initiation and metastasis[5, 6].

VHL is a classical gatekeeper inhibiting renal tumor initiation[7, 8, 9, 10, 11, 12, 13]. The main tumor-suppressive function of VHL is its role in mediating the degradation of HIF2-α (also known as endothelial PAS domain protein 1, EPAS1), a transcription factor that drives the expression of multiple target genes with tumorigenic functions[5, 14, 15, 16]. Additionally, at least one HIF2-α target gene, *CXCR4*, is a direct mediator of metastatic colonization[1, 6, 17, 18]. Therefore, it was previously suggested that loss of *VHL* might directly lead to metastatic tumor phenotypes through HIF activation[6]. This model, however, is challenged by the clinical findings that most VHL-negative

Center, New York, New York, USA.
Adriana Heguy

Genomics Core Facility, Memorial Sloan-Kettering Cancer Center, New York, New York, USA.
Agnes Viale

Department of Pathology, Memorial Sloan-Kettering Cancer Center, New York, New York, USA.
Victor E Reuter

Howard Hughes Medical Institute, Chevy Chase, Maryland, USA.
Joan Massagué

Contributions

S.V. and J.M. designed experiments. S.V. performed experiments and bioinformatic analysis. W.S. assisted with experiments. F.B. performed STAMP experiments. A.H. supervised Epityper analysis and genomic sequencing. V.E.R. and J.J.-D.H. provided clinical ccRCC specimens. A.A.H. analyzed *CXCR4* expression in clinical specimens. A.V. supervised high-throughput sequencing. J.M.S. and S.V. analyzed high-throughput sequencing data. S.V. and J.M. wrote the paper.

Competing financial interests

The authors declare no competing financial interests.

Corresponding author

Correspondence to: Joan Massagué

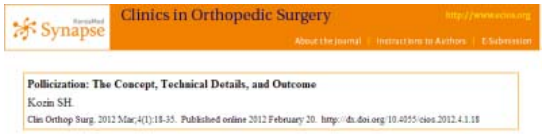
Supplementary information

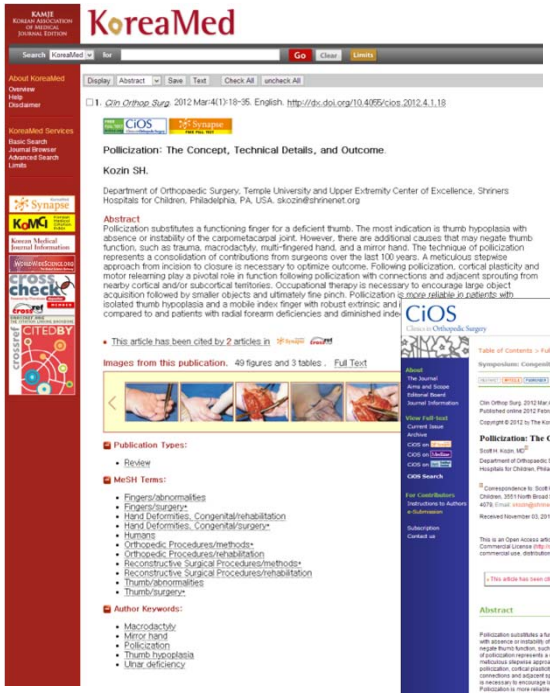
PDF files

1. Supplementary Text and Figures (2M)
   Supplementary Figures 1–20 and Supplementary Tables 1–6


Synapse
Clinics in Orthopedic Surgery
http://www.ecios.org
About the Journal | Instructions to Authors | E-Submission
About Synapse
Overview
Help
Disclaimer
KoreaMed
KoMCI
Korean Medical Journal Information
KAMJE
WorldWideScience.org
crossref
CITEDBY
Journal List > Clin Orthop Surg > v.4(1); Mar 2012
Symposium: Congenital Differences of the Hand
Open Access
ABSTRACT | ARTICLE | PUBREADER | PDF | FIGURES+TABLES | REFERENCES | SUPPL MATERIALS
Clin Orthop Surg. 2012 Mar;4(1):18-35. English.
Published online 2012 February 20. http://dx.doi.org/10.4055/cios.2012.4.1.18
Copyright © 2012 by The Korean Orthopaedic Association
Pollicization: The Concept, Technical Details, and Outcome
Scott H. Kozin, MD
Department of Orthopaedic Surgery, Temple University and Upper Extremity Center of Excellence, Shriners Hospitals for Children, Philadelphia, PA, USA.
Correspondence to: Scott H. Kozin, MD. Upper Extremity Center of Excellence, Shriners Hospitals for Children, 3551 North Broad Street, Philadelphia, PA 19140, USA. Tel: +1-215-430-4034, Fax: +1-215-430-4079, Email: skozin@shrinenet.org
Received November 03, 2011; Accepted December 30, 2011.
This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://creativecommons.org/licenses/by-nc/3.0) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.
This article has been cited by 2 articles in Synapse crossref
Abstract
Go to:
Pollicization substitutes a functioning finger for a deficient thumb. The most indication is thumb hypoplasia with absence or instability of the carpometacarpal joint. However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The technique of pollicization represents a consolidation of contributions from surgeons over the last 100 years. A meticulous stepwise approach from incision to closure is necessary to optimize outcome. Following pollicization, cortical plasticity and motor relearning play a pivotal role in function following pollicization with connections and adjacent sprouting from nearby cortical and/or subcortical territories. Occupational therapy is necessary to encourage large object acquisition followed by smaller objects and ultimately fine pinch. Pollicization is more reliable in patients with isolated thumb hypoplasia and a mobile index finger with robust extrinsic and intrinsic muscle-tendon units compared to and patients with radial forearm deficiencies and diminished index mobility.
Keywords: Pollicization, Thumb hypoplasia, Macrodactyly, Ulnar deficiency, Mirror hand.
Pollicization is an amazing operation that combines surgical skill with brain plasticity. The concept is to substitute a functioning finger for a deficient thumb. The deficient thumb is defined as one without ample function to contribute to prehension and grasp. The most common reason is hypoplasia with absence or instability of the carpometacarpal (CMC) joint, which obviates stability and function.1-3) However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The more time I spend caring for children with congenital hand differences, the more likely I am to pursue pollicization as an option to reconstruct the hand impaired by thumb hypoplasia and other ailments. I firmly believe that the best substitute for a deficient thumb with small girth, unstable CMC joint, and/or insufficient extrinsic/intrinsic muscles is a mobile functional index finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for pollicization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to pollicization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index pollicization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger pollicization. The parents are welcome to keep the "thumb", however, I avoid surgery to reconstruct a type IIB hypoplastic thumb as the results of index finger pollicization are far superior.4)
Formats:
Abstract
Article
PubReader
PDF
Figures + Tables
References
Supplementary Materials
Cited by:
articles (2)
Links to:
KoreaMed
the Journal
Export:
Download Citation
E-mail
Twitter
Facebook
Figures:
Show all...
Tables:
Show all...
Supplementary
Supplementary Material
Thumbnail Video
High Resolution
CiOS Clinics in Orthopedic Surgery
Pollicization: The Concept, Technical Details, and Outcome
Review Article


Synapse
Clinics in Orthopedic Surgery
http://www.ecios.org
About the Journal | Instructions to Authors | E-Submission
About Synapse
Overview
Help
Disclaimer
KoreaMed
KoMCI
Korean Medical Journal Information
KAMJE
WorldWideScience.org
crossref
CITEDBY
Powered by Synapse
Journal List > Clin Orthop Surg > v.4(1); Mar 2012
Symposium: Congenital Differences of the Hand
Open Access
ABSTRACT ARTICLE PUBREADER PDF FIGURES+TABLES REFERENCES SUPPL MATERIALS
Clin Orthop Surg. 2012 Mar;4(1):18-35. English.
Published online 2012 February 20. http://dx.doi.org/10.4055/cios.2012.4.1.18
Copyright © 2012 by The Korean Orthopaedic Association
Pollicization: The Concept, Technical Details, and Outcome
Scott H. Kozin, MD
Department of Orthopaedic Surgery, Temple University and Upper Extremity Center of Excellence, Shriners Hospitals for Children, Philadelphia, PA, USA.
Correspondence to: Scott H. Kozin, MD. Upper Extremity Center of Excellence, Shriners Hospitals for Children, 3551 North Broad Street, Philadelphia, PA 19140, USA. Tel: +1-215-430-4034, Fax: +1-215-430-4079, Email: skozin@shrinenet.org
Received November 03, 2011; Accepted December 30, 2011.
This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://creativecommons.org/licenses/by-nc/3.0) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.
This article has been cited by 2 articles in
Abstract
Go to:
Pollicization substitutes a functioning finger for a deficient thumb. The most indication is thumb hypoplasia with absence or instability of the carpometacarpal joint. However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The technique of pollicization represents a consolidation of contributions from surgeons over the last 100 years. A meticulous stepwise approach from incision to closure is necessary to optimize outcome. Following pollicization, cortical plasticity and motor relearning play a pivotal role in function following pollicization with connections and adjacent sprouting from nearby cortical and/or subcortical territories. Occupational therapy is necessary to encourage large object acquisition followed by smaller objects and ultimately fine pinch. Pollicization is more reliable in patients with isolated thumb hypoplasia and a mobile index finger with robust extrinsic and intrinsic muscle-tendon units compared to and patients with radial forearm deficiencies and diminished index mobility.
Keywords: Pollicization, Thumb hypoplasia, Macrodactyly, Ulnar deficiency, Mirror hand.
Pollicization is an amazing operation that combines surgical skill with brain plasticity. The concept is to substitute a functioning finger for a deficient thumb. The deficient thumb is defined as one without ample function to contribute to prehension and grasp. The most common reason is hypoplasia with absence or instability of the carpometacarpal (CMC) joint, which obviates stability and function.1-3) However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The more time I spend caring for children with congenital hand differences, the more likely I am to pursue pollicization as an option to reconstruct the hand impaired by thumb hypoplasia and other ailments. I firmly believe that the best substitute for a deficient thumb with small girth, unstable CMC joint, and/or insufficient extrinsic/intrinsic muscles is a mobile functional index finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for pollicization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to pollicization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index pollicization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger pollicization. The parents are welcome to keep the "thumb", however; I avoid surgery to reconstruct a type IIB hypoplastic thumb as the results of index finger pollicization are far superior.4)
Formats:
Abstract
Article
PubReader
PDF
Figures + Tables
References
Supplementary Materials
Cited by:
articles (2)
Links to:
KoreaMed
the Journal
Export:
Download Citation
E-mail
Twitter
Facebook
Figures:
Show all...
Tables:
Show all...
Supplementary Materials:
Supplementary Material
Policization
Scott H. Kozin, MD
2:13
Thumbnail Video
High Resolution Video (16M, wmv)


Synapse
Clinics in Orthopedic Surgery
http://www.ecios.org
About the Journal | Instructions to Authors | E-Submission
Policization: The Concept, Technical Details, and Outcome
Kozin SH.
Clin Orthop Surg. 2012 Mar;4(1):18-35. Published online 2012 February 20. http://dx.doi.org/10.4055/cios.2012.4.1.18
Is Cited by the Following Articles in
1. Outcome after Pollicization
de Kraker M, Selles RW, van Vooren J, Stam HJ, Hovius SE.
Plastic and Reconstructive Surgery. 2013;131(4):544e. http://dx.doi.org/10.1097/PRS.0b013e31828318c9
2. Thumb Hypoplasia
Soldado F, Zlotolow DA, Kozin SH.
The Journal of Hand Surgery. 2013;. http://dx.doi.org/10.1016/j.jhsa.2013.03.021


KAMJE
KoreaMed
Search KoreaMed for
Go Clear Limits
About KoreaMed
Overview
Help
Disclaimer
KoreaMed Services
Basic Search
Journal Browser
Advanced Search
Limits
Display Abstract Save Text Check All uncheck All
1. Clin Orthop Surg. 2012 Mar;4(1):18-35. English. http://dx.doi.org/10.4055/cios.2012.4.1.18
CiOS
Synapse
Policization: The Concept, Technical Details, and Outcome.
Kozin SH.
Department of Orthopaedic Surgery, Temple University and Upper Extremity Center of Excellence, Shriners Hospitals for Children, Philadelphia, PA, USA. skozin@shrinenet.org
Abstract
Pollicization substitutes a functioning finger for a deficient thumb. The most indication is thumb hypoplasia with absence or instability of the carpometacarpal joint. However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The technique of pollicization represents a consolidation of contributions from surgeons over the last 100 years. A meticulous stepwise approach from incision to closure is necessary to optimize outcome. Following pollicization, cortical plasticity and motor relearning play a pivotal role in function following pollicization with connections and adjacent sprouting from nearby cortical and/or subcortical territories. Occupational therapy is necessary to encourage large object acquisition followed by smaller objects and ultimately fine pinch. Pollicization is more reliable in patients with isolated thumb hypoplasia and a mobile index finger with robust extrinsic and
compared to and patients with radial forearm deficiencies and diminished inde
This article has been cited by 2 articles in
Images from this publication. 49 figures and 3 tables. Full Text
Publication Types:
Review
MeSH Terms:
Fingers/abnormalities
Fingers/surgery
Hand Deformities, Congenital/rehabilitation
Hand Deformities, Congenital/surgery
Humans
Orthopedic Procedures/methods
Orthopedic Procedures/rehabilitation
Reconstructive Surgical Procedures/methods
Reconstructive Surgical Procedures/rehabilitation
Thumb/abnormalities
Thumb/surgery
Author Keywords:
Macrodactyly
Mirror hand
Pollicization
Thumb hypoplasia
Ulnar deficiency
CiOS
Clinics in Orthopedic Surgery
Table of Contents > Full Text
Symposium: Congenital Differences of the Hand
Open Access
Policization: The Concept, Technical Details, and Outcome
Scott H. Kozin, MD
Abstract
Pollicization substitutes a functioning finger for a deficient thumb. The most indication is thumb hypoplasia with absence or instability of the carpometacarpal joint. However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The technique of pollicization represents a consolidation of contributions from surgeons over the last 100 years. A meticulous stepwise approach from incision to closure is necessary to optimize outcome. Following pollicization, cortical plasticity and motor relearning play a pivotal role in function following pollicization with connections and adjacent sprouting from nearby cortical and/or subcortical territories. Occupational therapy is necessary to encourage large object acquisition followed by smaller objects and ultimately fine pinch. Pollicization is more reliable in patients with isolated thumb hypoplasia and a mobile index finger with robust extrinsic and intrinsic muscle-tendon units compared to and patients with radial forearm deficiencies and diminished index mobility.
Keywords: Pollicization, Thumb hypoplasia, Macrodactyly, Ulnar deficiency, Mirror hand.
Pollicization is an amazing operation that combines surgical skill with brain plasticity. The concept is to substitute a functioning finger for a deficient thumb. The deficient thumb is defined as one without ample function to contribute to prehension and grasp. The most common reason is hypoplasia with absence or instability of the carpometacarpal (CMC) joint, which obviates stability and function.1-3) However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The more time I spend caring for children with congenital hand differences, the more likely I am to pursue pollicization as an option to reconstruct the hand impaired by thumb hypoplasia and other ailments. I firmly believe that the best substitute for a deficient thumb with small girth, unstable CMC joint, and/or insufficient extrinsic/intrinsic muscles is a mobile functional index finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for pollicization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to pollicization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index pollicization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger
Medline
PubMed
PubMed Central
SCOPUS
Policization
2:13

About Synapse
Overview
Help
Disclaimer

Journal List > Clin Orthop Surg > v.4(1); Mar 2012

Symposium: Congenital Differences of the Hand — Open Access

ABSTRACT | ARTICLE | PUBREADER | PDF | FIGURES+TABLES | REFERENCES | SUPPL MATERIALS

Clin Orthop Surg. 2012 Mar;4(1):18-35. English.
Published online 2012 February 20. http://dx.doi.org/10.4055/cios.2012.4.1.18

Pollicization: The Concept, Technical Details, and Outcome

Scott H. Kozin, MD

Department of Orthopaedic Surgery, Temple University and Upper Extremity Center of Excellence, Shriners Hospitals for Children, Philadelphia, PA, USA.

Correspondence to: Scott H. Kozin, MD. Upper Extremity Center of Excellence, Shriners Hospitals for Children, 3551 North Broad Street, Philadelphia, PA 19140, USA. Tel: +1-215-430-4034, Fax: +1-215-430-4079, Email: skozin@shrinenet.org

Received November 03, 2011; Accepted December 30, 2011.

This article has been cited by 2 articles in Synapse, crossref

Abstract

Go to:

Pollicization substitutes a functioning finger for a deficient thumb. The most indication is thumb hypoplasia with absence or instability of the carpometacarpal joint. However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The technique of pollicization represents a consolidation of contributions from surgeons over the last 100 years. A meticulous stepwise approach from incision to closure is necessary to optimize outcome. Following pollicization, cortical plasticity and motor relearning play a pivotal role in function following pollicization with connections and adjacent sprouting from nearby cortical and/or subcortical territories. Occupational therapy is necessary to encourage large object acquisition followed by smaller objects and ultimately fine pinch. Pollicization is more reliable in patients with isolated thumb hypoplasia and a mobile index finger with robust extrinsic and intrinsic muscle-tendon units compared to and patients with radial forearm deficiencies and diminished index mobility.

Keywords: Pollicization, Thumb hypoplasia, Macrodactyly, Ulnar deficiency, Mirror hand.

Pollicization is an amazing operation that combines surgical skill with brain plasticity. The concept is to substitute a functioning finger for a deficient thumb. The deficient thumb is defined as one without ample function to contribute to prehension and grasp. The most common reason is hypoplasia with absence or instability of the carpometacarpal (CMC) joint, which obviates stability and function.[1-3] However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The more time I spend caring for children with congenital hand differences, the more likely I am to pursue pollicization as an option to reconstruct the hand impaired by thumb hypoplasia and other ailments. I firmly believe that the best substitute for a deficient thumb with small girth, unstable CMC joint, and/or insufficient extrinsic/intrinsic muscles is a mobile functional index finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for pollicization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to pollicization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index pollicization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger pollicization. The parents are welcome to keep the "thumb", however, I avoid surgery to reconstruct a type IIB hypoplastic thumb as the results of index finger pollicization are far superior.[4]

Formats:
Abstract
Article
PubReader
PDF
Figures + Tables
References
Supplementary Materials

Cited by:
articles (2)

Links to:
KoreaMed
the Journal

Export:
Download Citation
E-mail
Twitter
Facebook

Figures:
Show all...

Tables:
Show all...

Supplementary Materials:
Supplementary Material
Thumbnail Video
High Resolution Video (16M, wmv)

Export Citation

Cite this as:

Kozin SH. **Pollicization: The Concept, Technical Details, and Outcome**. Clin Orthop Surg. 2012 Mar;4(1):18-35. http://dx.doi.org/10.4055/cios.2012.4.1.18

Choose your export options:

File Format: EndNote, ProCite, Reference Manager, RefWorks, RIS Format, Plain Text
Citation Format: Citation, Citation + Abstract
Export Cancel

E-mail a Link to a Colleague

E-mail a link to the following content:

Kozin SH. **Pollicization: The Concept, Technical Details, and Outcome**. Clin Orthop Surg. 2012 Mar;4(1):18-35. http://dx.doi.org/10.4055/cios.2012.4.1.18

Your Name:
Your E-mail Address:
E-Mail To:
Subject Line: Interesting content that I wanted to share with you
Personal message: (optional) I thought you might be interested in the following content I found on the Synapse.
Verification:

hsjang_xmlink

무슨 일이 일어나고 있나요?

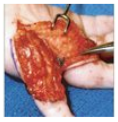
Kozin SH. Pollicization: The Concept, Technical Details... Clin Orthop Surg. 2012 Mar;4(1):18-35. http://dx.doi.org/10.4055/cios.2012.4.1.18

20 트윗하기

이 링크 공유하기

공유할 곳: 내 타임라인

글쓰기...



Pollicization: The Concept, Technical Details, and Outcome
http://synapse.koreamed.org/DOIx...
Kozin SH. Clin Orthop Surg. 2012 Mar;4(1):18-35.
http://dx.doi.org/10.4055/cios.2012.4.1.18

2개 중 1개 작은 이미지 선택
썸네일 삭제

전체 공개 링크 공유 취소

About Synapse
Overview
Help
Disclaimer

Journal List > Clin Orthop Surg > v.4(1); Mar 2012

Symposium: Congenital Differences of the Hand

Open Access

ABSTRACT | ARTICLE | PUBREADER | PDF | FIGURES+TABLES | REFERENCES | SUPPL MATERIALS

Clin Orthop Surg. 2012 Mar;4(1):18-35. English.
Published online 2012 February 20. http://dx.doi.org/10.4055/cios.2012.4.1.18

Pollicization: The Concept, Technical Details, and Outcome

Scott H. Kozin, MD

Department of Orthopaedic Surgery, Temple University and Upper Extremity Center of Excellence, Shriners Hospitals for Children, Philadelphia, PA, USA.

Correspondence to: Scott H. Kozin, MD. Upper Extremity Center of Excellence, Shriners Hospitals for Children, 3551 North Broad Street, Philadelphia, PA 19140, USA. Tel: +1-215-430-4034, Fax: +1-215-430-4079, Email: skozin@shrinenet.org

Received November 03, 2011; Accepted December 30, 2011.

This article has been cited by 2 articles in Synapse, CrossRef

Abstract

Go to

Pollicization substitutes a functioning finger for a deficient thumb. The most indication is thumb hypoplasia with absence or instability of the carpometacarpal joint. However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The technique of pollicization represents a consolidation of contributions from surgeons over the last 100 years. A meticulous stepwise approach from incision to closure is necessary to optimize outcome. Following pollicization, cortical plasticity and motor relearning play a pivotal role in function following pollicization with connections and adjacent sprouting from nearby cortical and/or subcortical territories. Occupational therapy is necessary to encourage large object acquisition followed by smaller objects and ultimately fine pinch. Pollicization is more reliable in patients with isolated thumb hypoplasia and a mobile index finger with robust extrinsic and intrinsic muscle-tendon units compared to and patients with radial forearm deficiencies and diminished index mobility.

Keywords: Pollicization, Thumb hypoplasia, Macrodactyly, Ulnar deficiency, Mirror hand.

Pollicization is an amazing operation that combines surgical skill with brain plasticity. The concept is to substitute a functioning finger for a deficient thumb. The deficient thumb is defined as one without ample function to contribute to prehension and grasp. The most common reason is hypoplasia with absence or instability of the carpometacarpal (CMC) joint, which obviates stability and function.[1-3] However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The more time I spend caring for children with congenital hand differences, the more likely I am to pursue pollicization as an option to reconstruct the hand impaired by thumb hypoplasia and other ailments. I firmly believe that the best substitute for a deficient thumb with small girth, unstable CMC joint, and/or insufficient extrinsic/intrinsic muscles is a mobile functional index finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for pollicization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to pollicization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index pollicization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger pollicization. The parents are welcome to keep the "thumb", however; I avoid surgery to reconstruct a type IIB hypoplastic thumb as the results of index finger pollicization are far superior.[4]

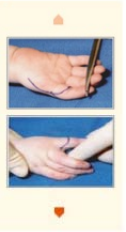
Formats:
Abstract
Article
PubReader
PDF
Figures + Tables
References
Supplementary Materials

Cited by:
Synapse, CrossRef articles (2)

Links to:
KoreaMed
the Journal

Export:
Download Citation
E-mail
Twitter
Facebook

Figures:



Show all...

Tables:

Show all...

Supplementary Materials:

Supplementary Material

Thumbnail Video
High Resolution Video (16M, wmv)

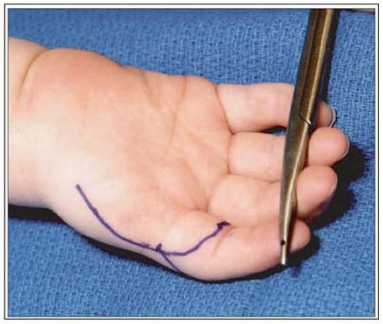


Fig. 1

Volar skin design (Courtesy of Shriners Hospital for Children, Philadelphia).

Clin Orthop Surg. 2012 Mar;4(1):18-35.
http://dx.doi.org/10.4055/cios.2012.4.1.18

Copyright © 2012 by The Korean Orthopaedic Association

Synapse
Clinics in Orthopedic Surgery
About the Journal | Instructions to A

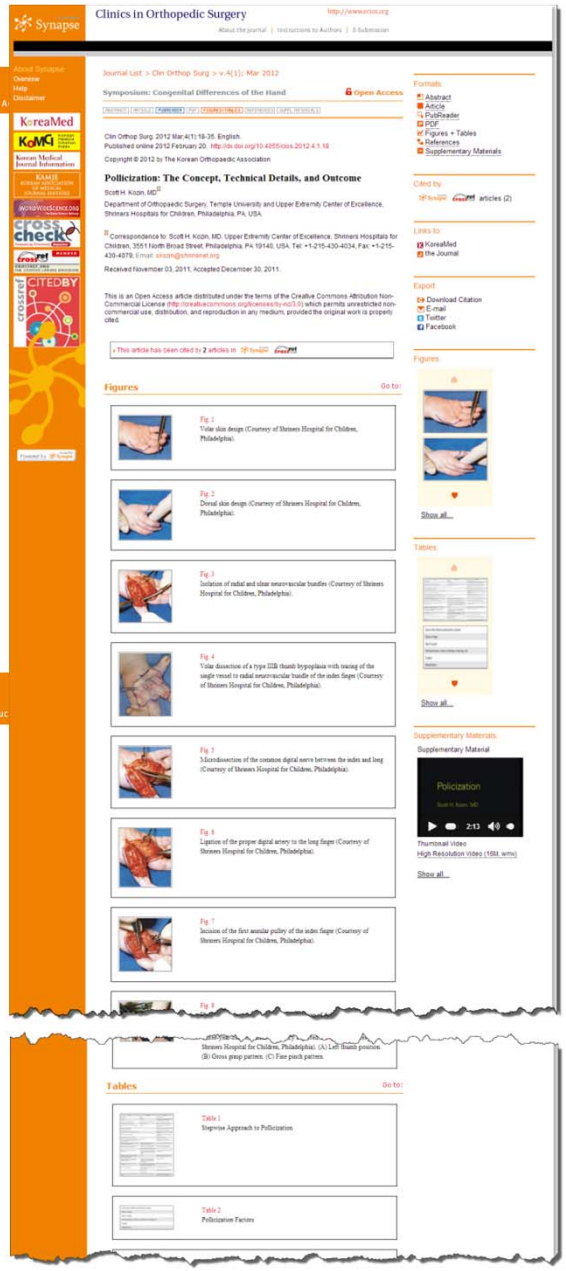
Table 2
Pollicization Factors

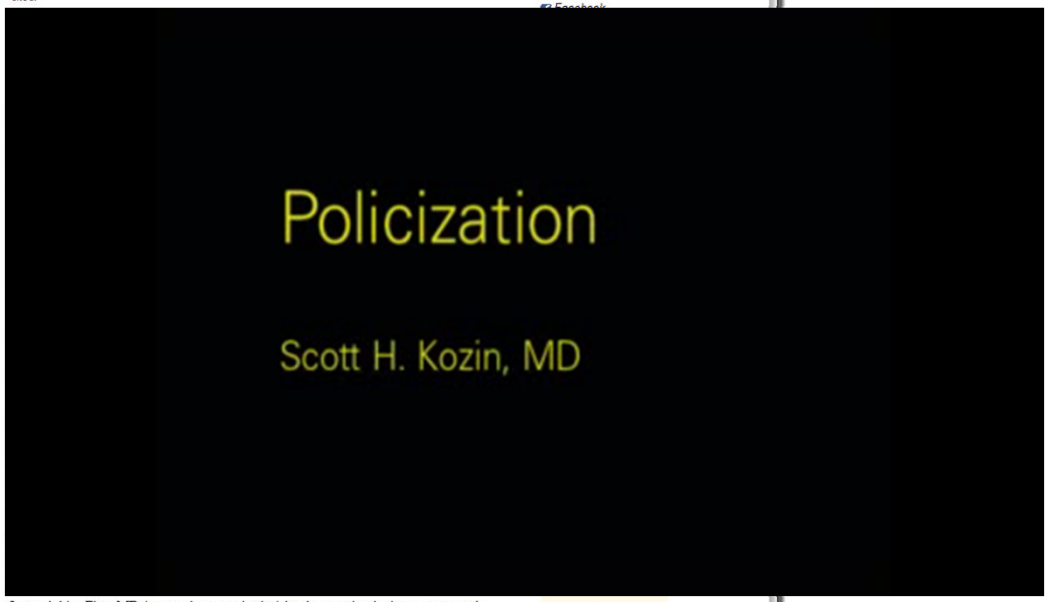
Factors that influence pollicization outcome
Status of finger
Age of surgery
Technical factors: incision, technique, dressings, etc.
Surgeon
Rehabilitation

Clin Orthop Surg. 2012 Mar;4(1):18-35.
http://dx.doi.org/10.4055/cios.2012.4.1.18

Copyright © 2012 by The Korean Orthopaedic Association

Synapse
Clinics in Orthopedic Surgery
About the Journal | Instruc



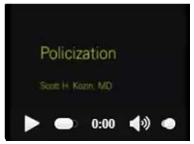


finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for pollicization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to pollicization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index pollicization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger pollicization. The parents are welcome to keep the "thumb", however; I avoid surgery to reconstruct a type IIB hypoplastic thumb as the results of index finger pollicization are far superior.[4]

Show all...

Supplementary Materials:

Supplementary Material



Thumbnail Video
High Resolution Video (16M, wmv)

Show all...

BRAIN PLASTICITY

Go to:

Cortical plasticity and motor relearning play a pivotal in functional following pollicization. There is a large region of the sensorimotor cortex (SMC) homunculus dedicated to the hand. Researchers are trying to understand the changes in SMC following injury, repair, and reconstruction.[5] Techniques include transcranial magnetic stimulation, electroencephalography, magnetoencephalography, functional magnetic resonance imaging (MRI), structural MRI, and positron emission tomography.[5-9] Human cortical plasticity is a complex process that involves the unveiling of previously ineffective connections and sprouting of intact afferents from nearby cortical and/or subcortical territories.

Giraux et al.[10] have demonstrated that after hand transplantation, the original SMC map for hand activation is restored. The transplantation reverses the SMC loss following the initial hand amputation. Similarly, successful toe transfer produces temporal activation within the SMC cortex consistent with cortical plasticity.[11] Functional MRI has demonstrated that a patient learning to use their toe transfer lead to an expansion in their motor cortical representation. Practice magnifies the changes within the SMC cortex. As the new motor skill is mastered, there is a subsequent decrease in the amount of cortical representation.[5,11] Functional MRI studies have provided evidence that that motor reorganization continues to evolve over time and may be modified by training and experience for a protracted time.[12] These findings suggest that prolonged therapy and training may be necessary to maximize cortical reorganization and functional outcome.

The effects of pollicization have yet to be studied with reference to cortical plasticity. The locale and quantity of homunculus thumb representation before and after pollicization is an intriguing question. Without a[illegible] fine[illegible]ental changes occur in the SMC cortex as the

followed by smaller objects and ultimately fine pinch. Pollicization is more reliable in patients with isolated thumb hypoplasia and a mobile index finger with robust extrinsic and intrinsic muscle-tendon units compared to and patients with radial forearm deficiencies and diminished index mobility.

Keywords: Pollicization, Thumb hypoplasia, Macrodactyly, Ulnar deficiency, Mirror hand.

Pollicization is an amazing operation that combines surgical skill with brain plasticity. The concept is to substitute a functioning finger for a deficient thumb. The deficient thumb is defined as one without ample function to contribute to prehension and grasp. The most common reason is hypoplasia with absence or instability of the carpometacarpal (CMC) joint, which obviates stability and function.1-3) However, there are additional causes that may negate thumb function, such as trauma, macrodactyly, multi-fingered hand, and a mirror hand. The more time I spend caring for children with congenital hand differences, the more likely I am to pursue pollicization as an option to reconstruct the hand impaired by thumb hypoplasia and other ailments. I firmly believe that the best substitute for a deficient thumb with small girth, unstable CMC joint, and/or insufficient extrinsic/intrinsic muscles is a mobile functional index finger. Adrian Flatt, MD (personal communication) has been an inspiration, mentor, and abounding with sage advice. He has extended congenital indications for pollicization to include a thumb smaller than a small finger and I concur! Reconstruction of a small hypoplastic thumb even with a stable CMC joint will pale in comparison to pollicization of a "normal" index finger. This decision requires a "heart to heart" conversation with the parents. The parents make the ultimate decision but the established surgeon has substantial influence. I spend substantial time explaining that "function trumps form" and that thumb ablation and index pollicization will result in enhanced function versus reconstruction of a small scrawny thumb. In addition, people are not very observant and a robust thumb with excellent function has better appearance compared to a small skinny thumb that contributes little to hand function. When in doubt, I recommend the parents discuss this decision with other parents who have made a similar difficult decision. This exchange is facilitated via a list of willing parents and support groups. Of course, cultural influences are important factors to be considered during this decision making process. Parents and society may ultimately negate the concept of thumb ablation and index finger pollicization. The parents are welcome to keep the "thumb", however; I avoid surgery to reconstruct a type IIB hypoplastic thumb as the results of index finger pollicization are far superior.4)

BRAIN PLASTICITY

Cortical plasticity and motor relearning play a pivotal in functional following pollicization. is a large region of the sensorimotor cortex (SMC) homunculus dedicated to the hand. Researchers are trying to understand the changes in SMC following injury, repair, and reconstruction.5) Techniques include transcranial magnetic stimulation, electroencephalography, magnetoencephalography, functional magnetic resonance imagi (MRI), structural MRI, and positron emission tomography.5-9) Human cortical plasticit complex process that involves the unveiling of previously ineffective connections and spr of intact afferents from nearby cortical and/or subcortical territories.

Giraux et al.10) have demonstrated that after hand transplantation, the original SMC ma hand activation is restored. The transplantation reverses the SMC loss following the initi amputation. Similarly, successful toe transfer produces temporal activation within the SM cortex consistent with cortical plasticity.11) Functional MRI has demonstrated that a pat learning to use their toe transfer lead to an expansion in their motor cortical representation. Practice magnifies the changes within the SMC cortex. As the new motor skill is mastered

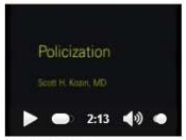
Show all...

Tables:

Show all...

Supplementary Materials:

Supplementary Material



Thumbnail Video
High Resolution Video (16M, wmv)

Show all

Go to:

such as ... apy.

Long-term complications are more prevalent. Any unsatisfactory outcome requires an analytical approach to find the root of the problem (Table 3). Additional surgery may or may not be available to improve the status and function of the thumb.31,32)

Supplementary Material

Go to:

A video clip is available on the electronic version of this paper at the CiOS web site, www.ecios.org.

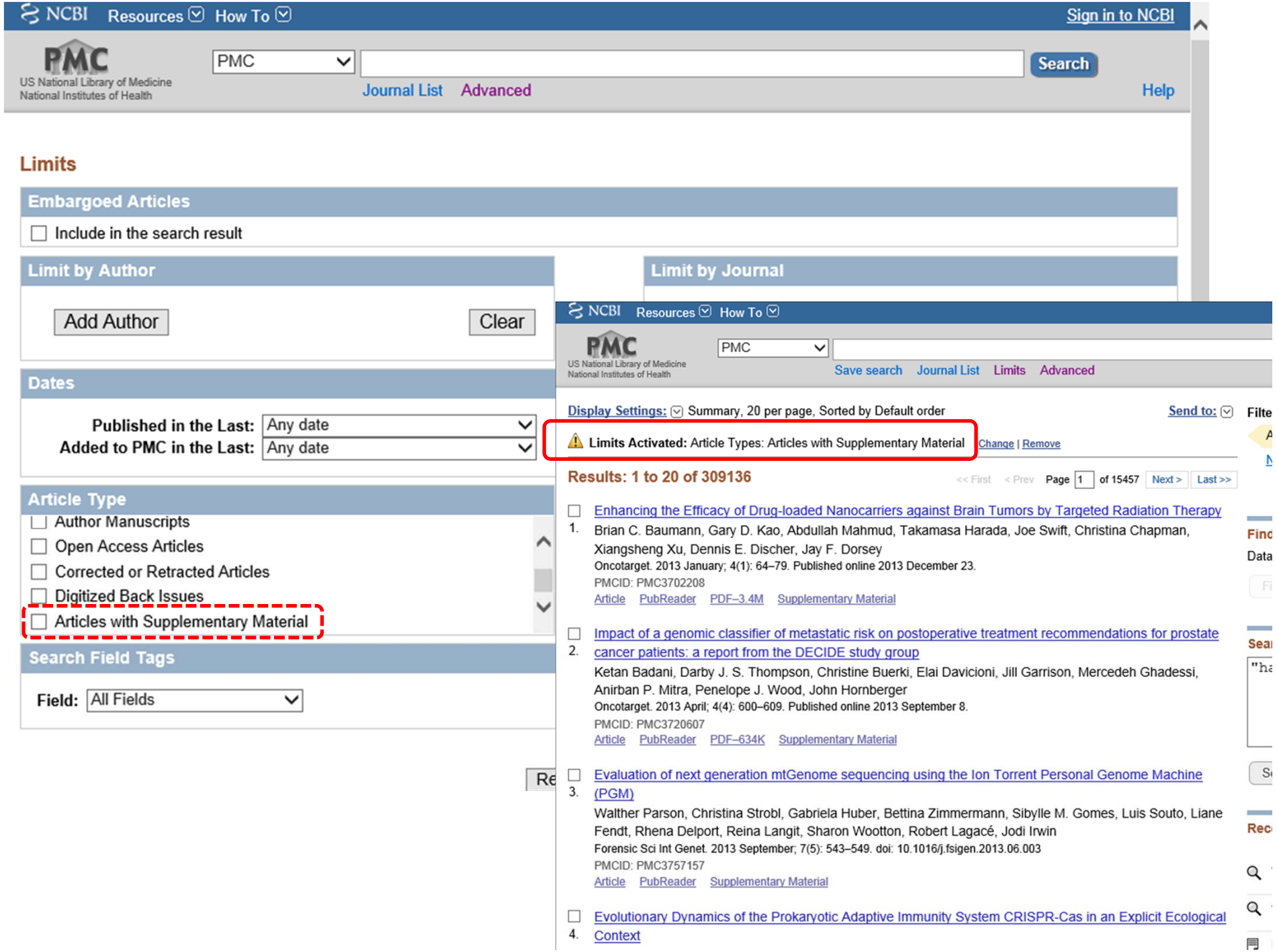
Click here to view. (16M, wmv)

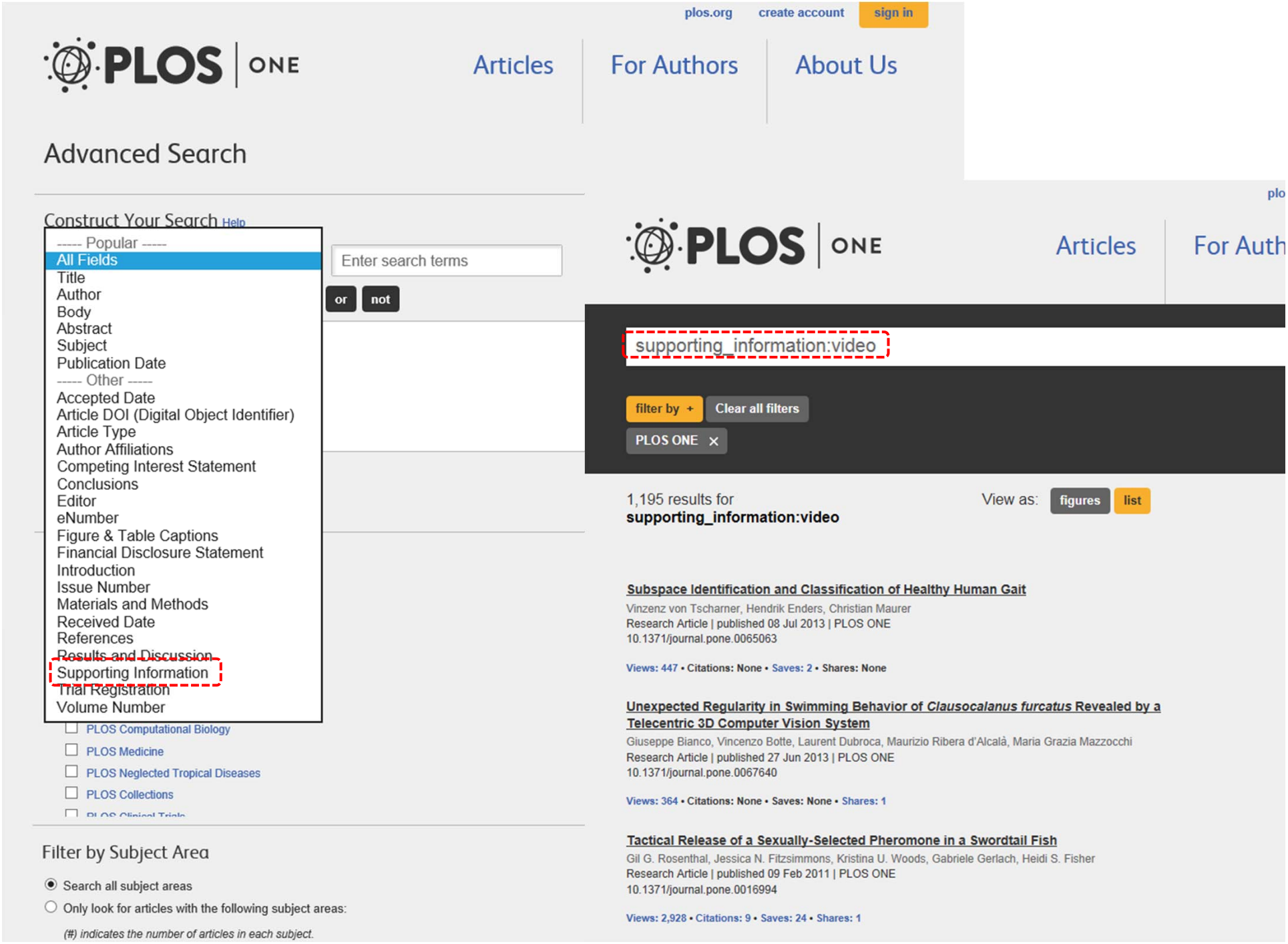
Figures

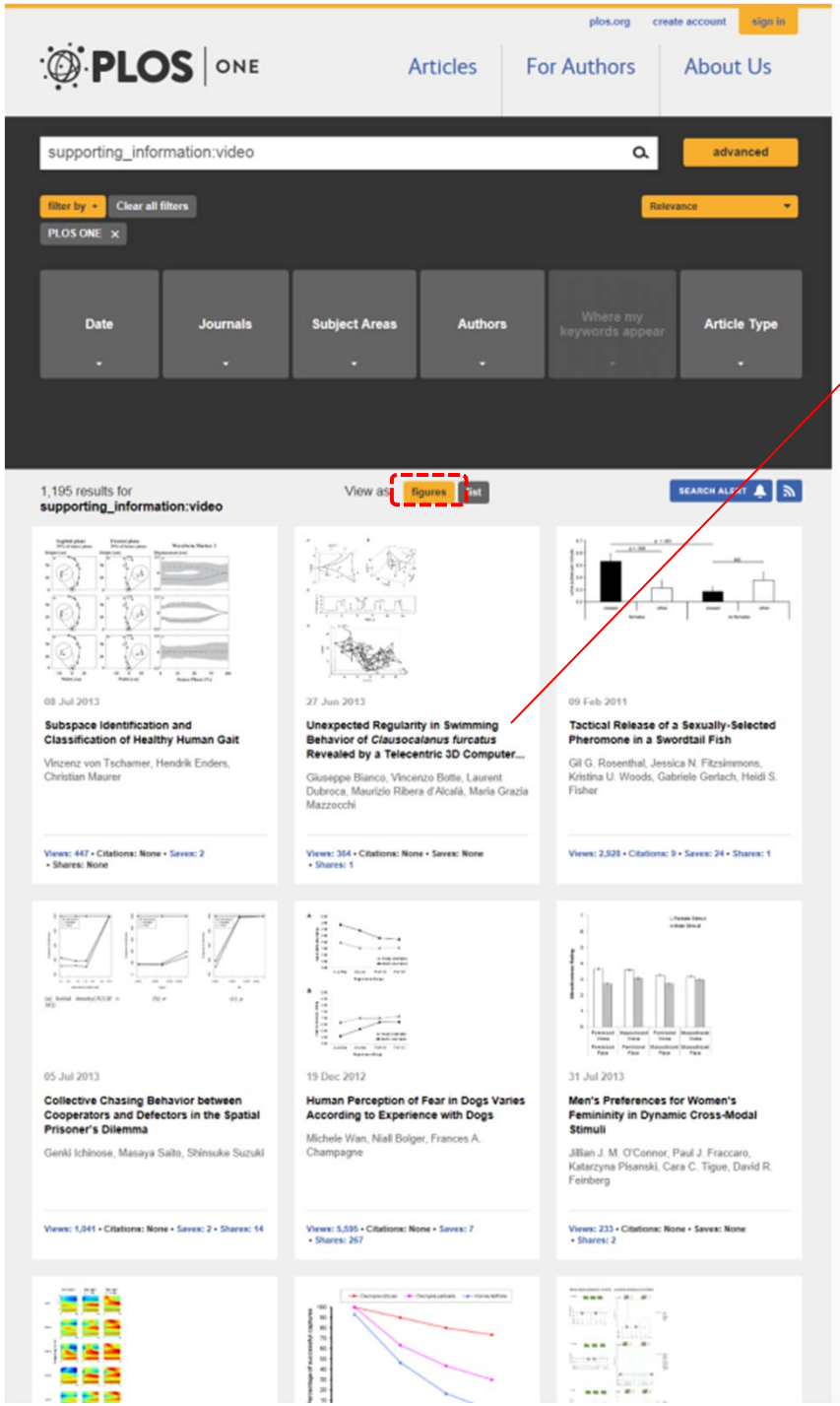
Go to:

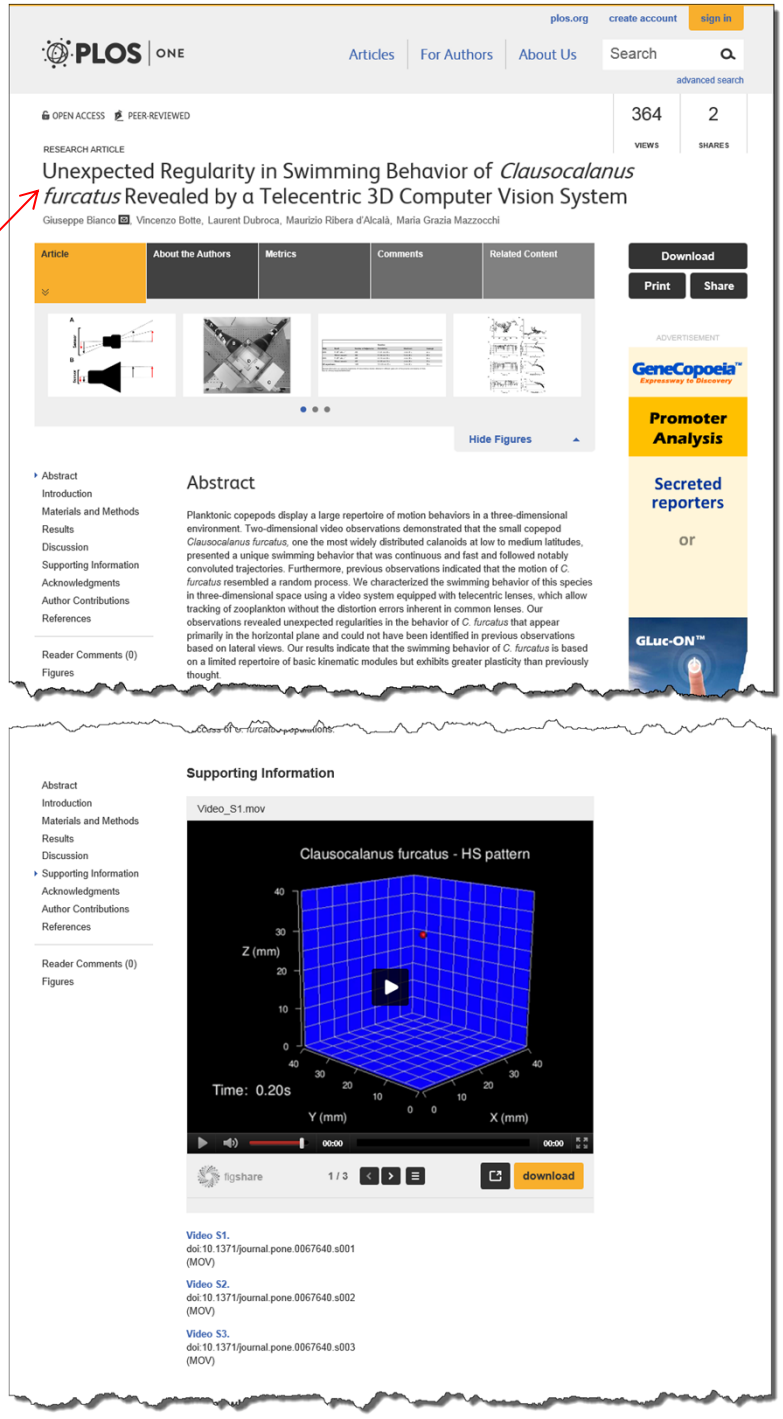
Fig. 1
Volar skin design (Courtesy of Shriners Hospital for Children, Philadelphia).

Fig. 2
Dorsal skin design (Courtesy of Shriners Hospital for Children,


NCBI Resources How To
Sign in to NCBI
PMC
US National Library of Medicine
National Institutes of Health
PMC
Search
Journal List Advanced
Help
Limits
Embargoed Articles
Include in the search result
Limit by Author
Add Author
Clear
Limit by Journal
Dates
Published in the Last: Any date
Added to PMC in the Last: Any date
Article Type
Author Manuscripts
Open Access Articles
Corrected or Retracted Articles
Digitized Back Issues
Articles with Supplementary Material
Search Field Tags
Field: All Fields
NCBI Resources How To
PMC
US National Library of Medicine
National Institutes of Health
Save search Journal List Limits Advanced
Display Settings: Summary, 20 per page, Sorted by Default order
Send to:
Limits Activated: Article Types: Articles with Supplementary Material
Change | Remove
Results: 1 to 20 of 309136
<< First < Prev Page 1 of 15457 Next > Last >>
1. Enhancing the Efficacy of Drug-loaded Nanocarriers against Brain Tumors by Targeted Radiation Therapy
Brian C. Baumann, Gary D. Kao, Abdullah Mahmud, Takamasa Harada, Joe Swift, Christina Chapman, Xiangsheng Xu, Dennis E. Discher, Jay F. Dorsey
Oncotarget. 2013 January; 4(1): 64–79. Published online 2013 December 23.
PMCID: PMC3702208
Article PubReader PDF–3.4M Supplementary Material
2. Impact of a genomic classifier of metastatic risk on postoperative treatment recommendations for prostate cancer patients: a report from the DECIDE study group
Ketan Badani, Darby J. S. Thompson, Christine Buerki, Elai Davicioni, Jill Garrison, Mercedeh Ghadessi, Anirban P. Mitra, Penelope J. Wood, John Hornberger
Oncotarget. 2013 April; 4(4): 600–609. Published online 2013 September 8.
PMCID: PMC3720607
Article PubReader PDF–634K Supplementary Material
3. Evaluation of next generation mtGenome sequencing using the Ion Torrent Personal Genome Machine (PGM)
Walther Parson, Christina Strobl, Gabriela Huber, Bettina Zimmermann, Sibylle M. Gomes, Luis Souto, Liane Fendt, Rhena Delport, Reina Langit, Sharon Wootton, Robert Lagacé, Jodi Irwin
Forensic Sci Int Genet. 2013 September; 7(5): 543–549. doi: 10.1016/j.fsigen.2013.06.003
PMCID: PMC3757157
Article PubReader Supplementary Material
4. Evolutionary Dynamics of the Prokaryotic Adaptive Immunity System CRISPR-Cas in an Explicit Ecological Context


plos.org
create account
sign in
PLOS ONE
Articles
For Authors
About Us
Advanced Search
Construct Your Search Help
----- Popular -----
All Fields
Title
Author
Body
Abstract
Subject
Publication Date
----- Other -----
Accepted Date
Article DOI (Digital Object Identifier)
Article Type
Author Affiliations
Competing Interest Statement
Conclusions
Editor
eNumber
Figure & Table Captions
Financial Disclosure Statement
Introduction
Issue Number
Materials and Methods
Received Date
References
Results and Discussion
Supporting Information
Trial Registration
Volume Number
Enter search terms
or
not
PLOS Computational Biology
PLOS Medicine
PLOS Neglected Tropical Diseases
PLOS Collections
Filter by Subject Area
Search all subject areas
Only look for articles with the following subject areas:
(#) indicates the number of articles in each subject.
PLOS ONE
Articles
supporting_information:video
filter by +
Clear all filters
PLOS ONE ×
1,195 results for
supporting_information:video
View as:
figures
list
Subspace Identification and Classification of Healthy Human Gait
Vinzenz von Tscharner, Hendrik Enders, Christian Maurer
Research Article | published 08 Jul 2013 | PLOS ONE
10.1371/journal.pone.0065063
Views: 447 • Citations: None • Saves: 2 • Shares: None
Unexpected Regularity in Swimming Behavior of Clausocalanus furcatus Revealed by a Telecentric 3D Computer Vision System
Giuseppe Bianco, Vincenzo Botte, Laurent Dubroca, Maurizio Ribera d'Alcalà, Maria Grazia Mazzocchi
Research Article | published 27 Jun 2013 | PLOS ONE
10.1371/journal.pone.0067640
Views: 364 • Citations: None • Saves: None • Shares: 1
Tactical Release of a Sexually-Selected Pheromone in a Swordtail Fish
Gil G. Rosenthal, Jessica N. Fitzsimmons, Kristina U. Woods, Gabriele Gerlach, Heidi S. Fisher
Research Article | published 09 Feb 2011 | PLOS ONE
10.1371/journal.pone.0016994
Views: 2,928 • Citations: 9 • Saves: 24 • Shares: 1


plos.org
create account
sign in
PLOS ONE
Articles
For Authors
About Us
supporting_information:video
advanced
filter by
Clear all filters
Relevance
PLOS ONE
Date
Journals
Subject Areas
Authors
Where my keywords appear
Article Type
1,195 results for
supporting_information:video
View as
figures
list
SEARCH ALERT
08 Jul 2013
Subspace Identification and Classification of Healthy Human Gait
Vinzenz von Tscharner, Hendrik Enders, Christian Maurer
27 Jun 2013
Unexpected Regularity in Swimming Behavior of Clausocalanus furcatus Revealed by a Telecentric 3D Computer...
Giuseppe Bianco, Vincenzo Botte, Laurent Dubroca, Maurizio Ribera d'Alcalà, Maria Grazia Mazzocchi
09 Feb 2011
Tactical Release of a Sexually-Selected Pheromone in a Swordtail Fish
Gil G. Rosenthal, Jessica N. Fitzsimmons, Kristina U. Woods, Gabriele Gerlach, Heidi S. Fisher
05 Jul 2013
Collective Chasing Behavior between Cooperators and Defectors in the Spatial Prisoner's Dilemma
Genki Ichinose, Masaya Saito, Shinsuke Suzuki
19 Dec 2012
Human Perception of Fear in Dogs Varies According to Experience with Dogs
Michele Wan, Niall Bolger, Frances A. Champagne
31 Jul 2013
Men's Preferences for Women's Femininity in Dynamic Cross-Modal Stimuli
Jillian J. M. O'Connor, Paul J. Fraccaro, Katarzyna Pisanski, Cara C. Tigue, David R. Feinberg


plos.org
create account
sign in
PLOS ONE
Articles
For Authors
About Us
Search
advanced search
OPEN ACCESS
PEER-REVIEWED
RESEARCH ARTICLE
364
VIEWS
2
SHARES
Unexpected Regularity in Swimming Behavior of Clausocalanus furcatus Revealed by a Telecentric 3D Computer Vision System
Giuseppe Bianco, Vincenzo Botte, Laurent Dubroca, Maurizio Ribera d'Alcalà, Maria Grazia Mazzocchi
Article
About the Authors
Metrics
Comments
Related Content
Download
Print
Share
Hide Figures
Abstract
Introduction
Materials and Methods
Results
Discussion
Supporting Information
Acknowledgments
Author Contributions
References
Reader Comments (0)
Figures
Abstract
Planktonic copepods display a large repertoire of motion behaviors in a three-dimensional environment. Two-dimensional video observations demonstrated that the small copepod Clausocalanus furcatus, one the most widely distributed calanoids at low to medium latitudes, presented a unique swimming behavior that was continuous and fast and followed notably convoluted trajectories. Furthermore, previous observations indicated that the motion of C. furcatus resembled a random process. We characterized the swimming behavior of this species in three-dimensional space using a video system equipped with telecentric lenses, which allow tracking of zooplankton without the distortion errors inherent in common lenses. Our observations revealed unexpected regularities in the behavior of C. furcatus that appear primarily in the horizontal plane and could not have been identified in previous observations based on lateral views. Our results indicate that the swimming behavior of C. furcatus is based on a limited repertoire of basic kinematic modules but exhibits greater plasticity than previously thought.
ADVERTISEMENT
GeneCopoeia
Expressway to Discovery
Promoter Analysis
Secreted reporters
or
GLuc-ON™

Abstract
Introduction
Materials and Methods
Results
Discussion
Supporting Information
Acknowledgments
Author Contributions
References
Reader Comments (0)
Figures
Supporting Information
Video_S1.mov
Clausocalanus furcatus - HS pattern
Z (mm)
Time: 0.20s
Y (mm)
X (mm)
figshare
1 / 3
download
Video S1.
doi:10.1371/journal.pone.0067640.s001
(MOV)
Video S2.
doi:10.1371/journal.pone.0067640.s002
(MOV)
Video S3.
doi:10.1371/journal.pone.0067640.s003
(MOV)

The NEW ENGLAND JOURNAL of MEDICINE

Advanced Search

By Citation

Volume Page Search

By Keyword or Phrase

Enter as much or as little information as you like. Blank fields will be ignored. Tips for searching.

Search within: Full Text / Title / Abstract/Extract

with all of the words

with the exact phrase: video

with at least one of the words

without the words

By Author

Enter author names separated by a semicolon.

All of these authors / Any of these authors

Limit Results

By Article Category: All Categories / Research / Commentary / Perspective / Clinical Cases / Review / Other

By Date: Past 10 years / Past 20 years / Past 50 years / Past 100 years / Archive 1812–Present / Specific date range: From: Sep 2012 To: Sep 2013

Search

TRENDS
Most Viewed (Last Week)

REVIEW ARTICLE
Severe Sepsis and Septic Shock
August 29, 2013 | D.C. Angus and T.V.D. Poll

ORIGINAL ARTICLE
Dabigatran versus Warfarin in Patients with Mechanical Heart Valves
August 31, 2013 | J.W. Eikelboom and Others

ORIGINAL ARTICLE
Saxagliptin and Cardiovascular Outcomes in Patients with Type 2 Diabetes Mellitus
September 2, 2013 | B.M. Scirica and Others

More Trends ›

The NEW ENGLAND JOURNAL of MEDICINE

Search Results

Follow Topic: SAVE | RSS

Showing **1** to **20** of **293** Articles for "video"

Filters: All Specialties, All Categories, Past 10 years

Search Type: ARTICLES | FIGURES & MULTIMEDIA

Did you find this search useful? Yes - No

"video" Search

FILTER RESULTS

By Specialty
- All Specialties
- Primary Care/ Hospitalist/ Clinical Practice (74)
- Pulmonary/ Critical Care (65)
- Cardiology (62)
- Neurology/Neurosurgery (48)
- Surgery (44)
- Health Policy and Reform (40)
- More

By Article Category
- All Categories
- Clinical Cases (76)
- Research (62)
- Perspective (53)
- Other (41)
- Review (34)
- Commentary (26)
- More

By Date
- Past 10 years
- Past 20 years
- Past 50 years
- Past 100 years
- Complete archive (1812-present)
- Specific date range

Show Only Articles with CME

SORT BY: Most Relevant | Newest | Oldest | Most Cited

VIDEOS IN CLINICAL MEDICINE
Lumbar Puncture
September 28, 2006 | Ellenby M.S.Tegtmeyer K.Lai S.Braner D.A.V. | N Engl J Med 2006; 355:e12

ORIGINAL ARTICLE
Capsule Endoscopy versus Colonoscopy for the Detection of Polyps and Cancer
...(PillCam SB, Given Imaging), the PillCam COLON capsule endoscope (Given Imaging), an ingestible capsule consisting of an endoscope equipped with a video camera at both ends, was designed especially for visualizing the colon.– Two pilot studies have shown the feasibility and safety of capsule endoscopy...
July 16, 2009 | Van Gossum A., Munoz-Navas M., Fernandez-Urien I., et al. | N Engl J Med 2009; 361:264-270
Free Full Text

CLINICAL PRACTICE
Emergency Treatment of Asthma
...-to-moderate exacerbations, ideally with supervision from trained respiratory therapists or nursing personnel (see the Supplementary Appendix and a Video, both available at NEJM.org, for descriptions of how to use inhalers with and inhalers without a holding chamber, respectively). The dose administered...
August 19, 2010 | Lazarus S.C. | N Engl J Med 2010; 363:755-764
Full Text Audio

ORIGINAL ARTICLE
Esophageal Sphincter Device for Gastroesophageal Reflux Disease
...(Figure 1A). The beads separate with the transport of food or increased intragastric pressure associated with belching or vomiting (Figure 1B; and see Video 1, available at NEJM.org). There were no dietary restrictions after implantation. End Points. The primary end point was the number of patients who had...
February 21, 2013 | Ganz R.A., Peters J.H., Horgan S., et al. | N Engl J Med 2013; 368:719-727
Free Full Text | Video

CLINICAL PRACTICE
Diagnosis and Initial Management of Parkinson's Disease
...tremor in a limb, most commonly one hand, that disappears with voluntary movement. It frequently emerges in a hand while the person is walking. (A video clip is available with the full text of this article at www.nejm.org.) Rest tremor is virtually pathognomonic of Parkinson's disease. However, the diagnosis...
September 8, 2005 | Nutt J.G. and Wooten G.F. | N Engl J Med 2005; 353:1021-1027
Video

SPECIAL ARTICLE
Simulation-Based Trial of Surgical-Crisis Checklists
...disagreement or uncertainty among reviewers regarding adherence by the team to a key process was decided by means of expert review (assessment of the video by a senior surgeon, a senior anesthesiologist, or a senior physician who was an expert in guidelines for advanced cardiac life support). A random 15%...
January 17, 2013 | Arriaga A.F., Bader A.M., Wong J.M., et al. | N Engl J Med 2013; 368:246-253
Free Full Text | Comments

ORIGINAL ARTICLE
Neurostimulation for Parkinson's Disease with Early Motor Complications
...performed at baseline and at 24 months (see the Supplementary Appendix). Blinded assessments were based on preoperative and postoperative standardized video recordings obtained at baseline and at 24 months. Videos were recorded for each motor condition (according to whether the patient was or was not receiving...
February 14, 2013 | Schuepbach W.M.M., Rau J., Knudsen K., et al. | N Engl J Med 2013; 368:610-622
Free Full Text | CME

CLINICAL PRACTICE
Mild Asthma
...is essential to maintain control and to establish the lowest effective dose of treatment. Inhaler technique should be reviewed regularly (see the video in Hendeles et al. also available with this article, at NEJM.org), and patients should be queried regarding side effects of the medication. Avoidance...
August 8, 2013 | Bel E.H. | N Engl J Med 2013; 369:542-457

SEARCH SUGGESTIONS
- lumbar puncture video
- lumbar puncture
- chest tube insertion video
- pelvic examination video
- videos in clinical medicine
- paracentesis video
- central venous catheterization video
- subclavian vein catheterization video
- chest tube
- paracentesis

TRENDS
Most Viewed (Last Week)

REVIEW ARTICLE
Severe Sepsis and Septic Shock
August 29, 2013 | D.C. Angus and T.V.D. Poll

ORIGINAL ARTICLE
Dabigatran versus Warfarin in Patients with Mechanical Heart Valves
August 31, 2013 | J.W. Eikelboom and Others

ORIGINAL ARTICLE
Saxagliptin and Cardiovascular Outcomes in Patients with Type 2 Diabetes Mellitus
September 2, 2013 | B.M. Scirica and Others

More Trends ›

The NEW ENGLAND JOURNAL of MEDICINE

Search Results

Follow Topic: SAVE | RSS

Showing **1** to **20** of **450** Figures and Multimedia for **"video"**

Filters: All Specialties, All Types, Past 10 years

Did you find this search useful? Yes - No

Search Type: ARTICLES | FIGURES & MULTIMEDIA

"video" Search

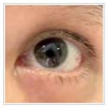
FILTER RESULTS

By Specialty
- All Specialties
- Primary Care/ Hospitalist/ Clinical Practice (265)
- Cardiology (152)
- Pulmonary/ Critical Care (125)
- Surgery (113)
- Emergency Medicine (89)
- Neurology/Neurosurgery (81)
- More

By Media Type
- All Types
- Video (244)
- Figure (127)
- Images in Clinical Medicine (103)
- Videos in Clinical Medicine (43)
- Animation (16)
- Video Roundtable (13)
- More

By Date
- Past 10 years
- Past 20 years
- Past 50 years
- Past 100 years
- Complete archive (1812-present)
- Specific date range

SORT BY: Most Relevant | Newest | Oldest | Most Cited



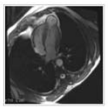
IMAGES IN CLINICAL MEDICINE

Pendular Nystagmus and Palatomyoclonus from Hypertrophic Olivary Degeneration

Pendular Nystagmus (Video 1) and Palatomyoclonus (Video 2).

February 26, 2009 | Lim C.C.T. and Lim S.A. | N Engl J Med 2009; 360:e12

Free Full Text

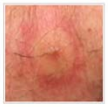


CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 2-2010 — A 47-Year-Old Man with Abdominal and Flank Pain

Transthoracic Echocardiogram (Video 1) and Cardiac MRI (Video 2).

January 21, 2010 | Isselbacher E.M.Kligerman S.J.Lam K.M.Hurtado R.M. | N Engl J Med 2010; 362:254-262



IMAGES IN CLINICAL MEDICINE

Flashing, Pulsating Angioma

Video and Ultrasonogram of Pulsating Angioma.

June 14, 2012 | Zouboulis C.C. and Liakou A.I. | N Engl J Med 2012; 366:e36

Free Full Text

IMAGES IN CLINICAL MEDICINE

Cycling for Freezing of Gait

Freezing of Gait (Video 1) and Kinesia Paradoxa during Cycling (Video 2).

April 1, 2010 | Snijders A.H. and Bloem B.R. | N Engl J Med 2010; 362:e46

Free Full Text

CORRESPONDENCE

Point-of-Care Photomicroscopy of Urine

Video Photomicrograph of Urine Sediment for Cell Identification.

May 12, 2011 | N Engl J Med 2011; 364:1880-1881

Free Full Text

CLINICAL THERAPEUTICS

Inhaled Insulin for Diabetes Mellitus

Video Demonstrating the Use of Inhaled Insulin.

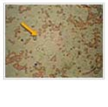
February 1, 2007 | McMahon G.T. and Arky R.A. | N Engl J Med 2007; 356:497-502

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 21-2006 — A 61-Year-Old Man with Left-Sided Facial Pain

Intraoperative Video of Microvascular Decompression Surgery.

July 13, 2006 | Eskandar E.Barker F.G.Rabinov J.D. | N Engl J Med 2006; 355:183-188



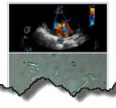
IMAGES IN CLINICAL MEDICINE

Loiasis

Video Showing Highly Motile Microfilariae.

August 17, 2006 | Weitzel T. and Jelinek T. | N Engl J Med 2006; 355:e6

Free Full Text



CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 39-2005 — A 63-Year-Old Woman with a Positive Serologic Test for Syphilis and Persistent Eosinophilia

Transthoracic Echocardiogram (Video 1) and Skin Snip Showing Onchocerca volvulus Microfilariae (Video 2).

SEARCH SUGGESTIONS

lumbar puncture video
lumbar puncture
chest tube insertion video
pelvic examination video
videos in clinical medicine
paracentesis video
central venous catheterization video
subclavian vein catheterization video
chest tube
paracentesis

TRENDS
Most Viewed (Last Week)

REVIEW ARTICLE
Severe Sepsis and Septic Shock
August 29, 2013 | D.C. Angus and T.V.D. Poll

ORIGINAL ARTICLE
Dabigatran versus Warfarin in Patients with Mechanical Heart Valves
August 31, 2013 | J.W. Eikelboom and Others

ORIGINAL ARTICLE
Saxagliptin and Cardiovascular Outcomes in Patients with Type 2 Diabetes Mellitus
September 2, 2013 | B.M. Scirica and Others

More Trends

The NEW ENGLAND JOURNAL of MEDICINE

Search Results

Follow Topic: SAVE | RSS

Showing **1** to **20** of **127** Figures and Multimedia for **"video"**

Filters: All Specialties, Figure, Past 10 years

Did you find this search useful? Yes - No

Search Type: ARTICLES | FIGURES & MULTIMEDIA

"video" Search

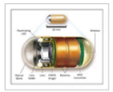
FILTER RESULTS

By Specialty
- All Specialties
- Primary Care/ Hospitalist/ Clinical Practice (89)
- Cardiology (41)
- Pulmonary/ Critical Care (35)
- Surgery (28)
- Neurology/Neurosurgery (25)
- Gastroenterology (22)
- More

By Media Type
- All Types
- Video (244)
- Figure (127)
- Images in Clinical Medicine (103)
- Videos in Clinical Medicine (43)
- Animation (16)
- Video Roundtable (13)
- Video Interview (4)
- Audio (1)
- Audio Interview (1)
- Table (1)
- Less

By Date
- Past 10 years
- Past 20 years
- Past 50 years
- Past 100 years
- Complete archive (1812-present)
- Specific date range

SORT BY: Most Relevant | Newest | Oldest | Most Cited



CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 24-2004 — A 48-Year-Old Man with Recurrent Gastrointestinal Bleeding

Video-Capsule Endoscope.

…are transmitted to a sensor-antenna array and data recorder worn by the patient. The data are downloaded and interpreted by a computer, creating a video that can be viewed by the physician in about an hour. Adapted from an image provided by Given Imaging.

July 29, 2004 | Keroack M.D.Peralta R.Abramson S.D.Misdraji J. | N Engl J Med 2004; 351:488-495

PERSPECTIVE

Stem-Cell Research — Signposts and Roadblocks

Human embryonic stem cells may differentiate into cardiomyocytes (Video).

Nicolas Christoforou and John Gearhart, Institute for Cell Engineering, Johns Hopkins Medical Institutions.

July 7, 2005 | Okie S. | N Engl J Med 2005; 353:1-5

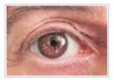
Free Full Text

CLINICAL PROBLEM-SOLVING

Anchors Away

Cut Surface of a Specimen from a Video-Assisted Thoracoscopic Lung Biopsy, Showing Several Pale, Solid Nodules.

February 1, 2007 | Calfee C.S.Shah S.J.Wolters P.J.Saint S.King T.E. | N Engl J Med 2007; 356:504-509



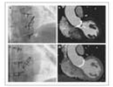
IMAGES IN CLINICAL MEDICINE

Voluntary Nystagmus

…the audience. After deliberately fixing her gaze on a point in space, she could begin the voluntary nystagmus; this was recorded with video-oculography (see Video). The condition consists of multiple saccades at high frequency and low amplitude. Voluntary nystagmus reflects the behavior of the saccadic…

August 30, 2012 | Bassani R. | N Engl J Med 2012; 367:e13

Free Full Text



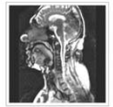
IMAGES IN CLINICAL MEDICINE

The Silence of the Leaflets

…(CTA) revealed a hypodense mass on the leaflets that was suggestive of thrombus, although a vegetation could not be ruled out (Panel B, arrow; and video 1). Target values for the international normalized ratio were increased from 3.0 to 4.0, and aspirin was administered. The patient was scheduled to…

April 18, 2013 | Tanis W. and Habets J. | N Engl J Med 2013; 368:e21

Free Full Text



IMAGES IN CLINICAL MEDICINE

Sleep Apnea

…and ending when the patient, after choking for several seconds, opened his mouth (Video 1). We treated the patient successfully with nasal continuous positive airway pressure, with a pressure of 10 cm of water (Video 2), which reduced his daytime sleepiness and improved alertness.

November 29, 2012 | Kuipers A.F. and Bartels L.W. | N Engl J Med 2012; 367:e33

Free Full Text

IMAGES IN CLINICAL MEDICINE

Pneumatosis Intestinalis

SEARCH SUGGESTIONS

lumbar puncture video
lumbar puncture
chest tube insertion video
pelvic examination video
videos in clinical medicine
paracentesis video
central venous catheterization video
subclavian vein catheterization video
chest tube
paracentesis

TRENDS
Most Viewed (Last Week)

REVIEW ARTICLE
Severe Sepsis and Septic Shock
August 29, 2013 | D.C. Angus and T.V.D. Poll

ORIGINAL ARTICLE
Dabigatran versus Warfarin in Patients with Mechanical Heart Valves
August 31, 2013 | J.W. Eikelboom and Others

ORIGINAL ARTICLE
Saxagliptin and Cardiovascular Outcomes in Patients with Type 2 Diabetes Mellitus
September 2, 2013 | B.M. Scirica and Others

More Trends

Europe PubMed Central

Advanced Search

New: Did you know that you can add Europe PMC search to your browser toolbar?

Query

Title(s)

Author(s)

Affiliation(s)

Publication Year From To

Journal(s)

MeSH Subject(s)

General query

Preferences

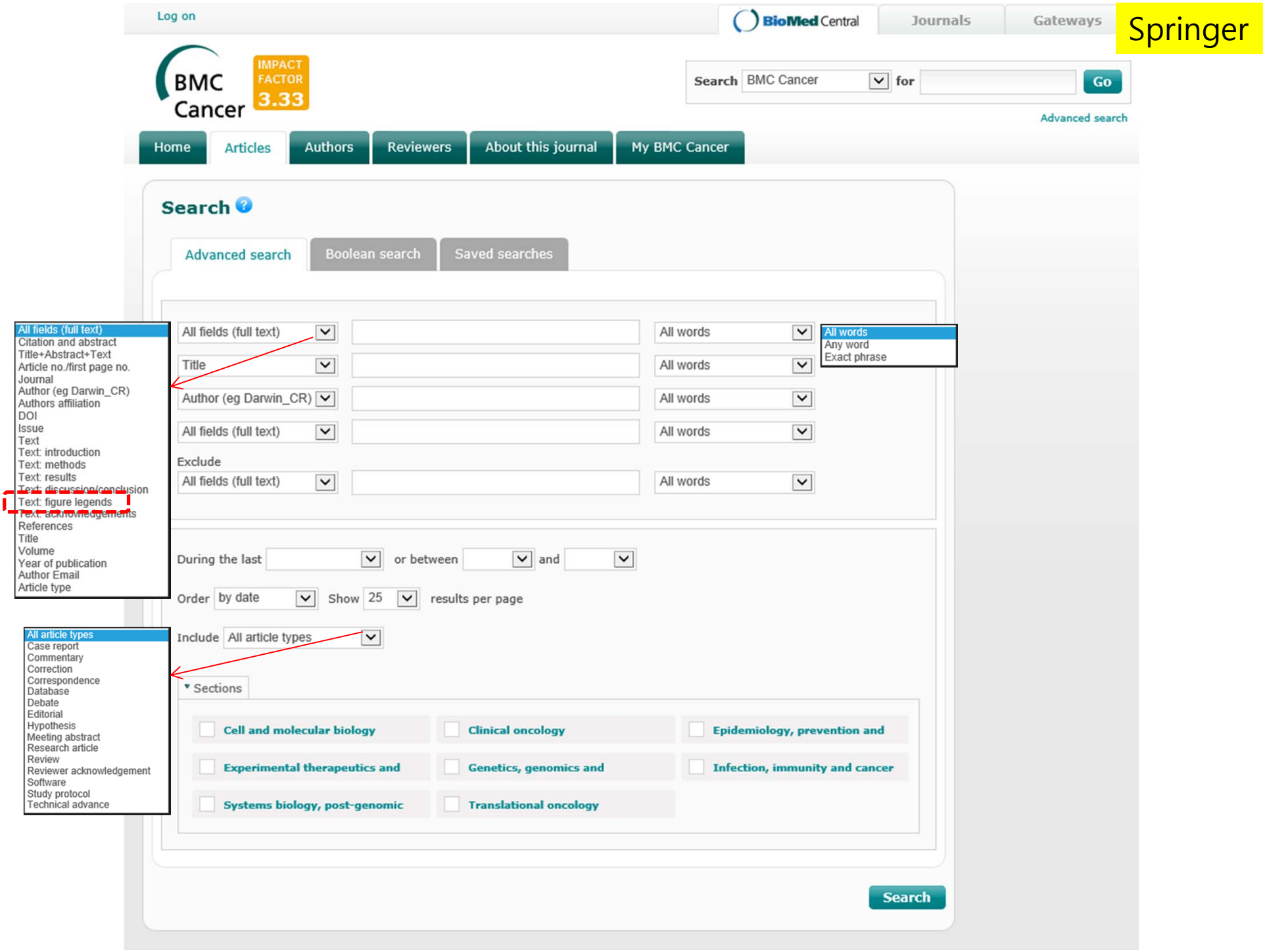
Expand your query with MeSH synonyms ☑

Sort by Date

Search only All results

- All results
- Reviews
- Biological Patents
- Doctoral Theses
- UK Clinical Guidelines
- UK Research Reports
- Meta-Analyses
- Ran. Controlled Trials
- All Clinical Trials
- All Practice Guidelines

Clear ... arch


Springer
Log on
BioMed Central
Journals
Gateways
BMC Cancer
IMPACT FACTOR 3.33
Search BMC Cancer for Go
Advanced search
Home
Articles
Authors
Reviewers
About this journal
My BMC Cancer
Search
Advanced search
Boolean search
Saved searches
All fields (full text)
Citation and abstract
Title+Abstract+Text
Article no./first page no.
Journal
Author (eg Darwin_CR)
Authors affiliation
DOI
Issue
Text
Text: introduction
Text: methods
Text: results
Text: discussion/conclusion
Text: figure legends
Text: acknowledgements
References
Title
Volume
Year of publication
Author Email
Article type
All fields (full text)
Title
Author (eg Darwin_CR)
All fields (full text)
Exclude
All fields (full text)
All words
Any word
Exact phrase
During the last
or between
and
Order by date
Show 25 results per page
Include All article types
All article types
Case report
Commentary
Correction
Correspondence
Database
Debate
Editorial
Hypothesis
Meeting abstract
Research article
Review
Reviewer acknowledgement
Software
Study protocol
Technical advance
Sections
Cell and molecular biology
Clinical oncology
Epidemiology, prevention and
Experimental therapeutics and
Genetics, genomics and
Infection, immunity and cancer
Systems biology, post-genomic
Translational oncology
Search

Elsevier

Advanced Search

Anywhere in Full Text — SEARCH

Title/Abstract

Author Name(s)

Affiliation

Volume: Issue: Start Page:

Dates: From (yyyy) to (yyyy)

Sort Results: by Date

Results Per Page: 10

Journals:

- [ ] All Journals
- [x] Cell
- [ ] AJHG
- [ ] Biophysical Journal
- [ ] Cancer Cell
- [ ] Cell Host & Microbe
- [ ] Cell Metabolism
- [ ] Cell Reports
- [ ] Cell Stem Cell
- [ ] Chemistry & Biology
- [ ] Current Biology
- [ ] Developmental Cell
- [ ] Immunity
- [ ] Molecular Cell
- [ ] Neuron
- [ ] Stem Cell Reports
- [ ] Structure
- [ ] Trends in Biochemical Sciences
- [ ] Trends in Biotechnology
- [ ] Trends in Cell Biology
- [ ] Trends in Cognitive Sciences
- [ ] Trends in Ecology & Evolution
- [ ] Trends in Endocrinology and Metabolism
- [ ] Trends in Genetics
- [ ] Trends in Immunology
- [ ] Trends in Microbiology
- [ ] Trends in Molecular Medicine
- [ ] Trends in Neurosciences
- [ ] Trends in Parasitology
- [ ] Trends in Pharmacological Sciences
- [ ] Trends in Plant Science

CLEAR

Or Search by DOI — SEARCH

(example: doi:10.1016/j.ccr.2007.05.003)

Search Tips

- Check your spelling.
- Avoid 2 or 3 character searches.
- Truncate words using the asterisk (*) to find word variations: embryo* retrieves embryo, embryos, embryonic.
- Use related terms or synonyms.
- To find an exact phrase enclose in quotations.
- Add connectors like AND, remove plus signs.
- Separate multiple author searches by a semi-colon, e.g. jones p; lee k.
- Special character searches are possible, e.g. Grundström or α or β. You can also try spelling out the special character, e.g. beta or gamma
- Pay particular attention to terms containing hyphens, periods, or other punctuation. Punctuation is ignored and letters or numbers separated by punctuation are treated as separate words: Search IL-4 with il-4 or il 4 (with a space), but not with il4 (without a space). Search mRNA with mrna, not with m-rna or m rna.

Elsevier

THE LANCET

Advanced Search

Search For

[ ] in [All Fields]

[AND] [ ] in [All Fields]
Article Title, Abstract, Keywords
Authors
Article Title
Abstract

Year [ ] Volume [ ] Page [ ]

Limit to

Journal

- ☐ *The Lancet*
- ☐ *The Lancet Diabetes & Endocrinology*
- ☐ *The Lancet Global Health*
- ☐ *The Lancet Infectious Diseases*
- ☐ *The Lancet Neurology*
- ☐ *The Lancet Oncology*
- ☐ *The Lancet Respiratory Medicine*

Article Type

- ☐ Correspondence
- ☐ Editorial & Comment
- ☐ News, Media, & the Arts
- ☐ Research
- ☐ Review & Seminars
- ☐ Case Reports & Clinical Pictures

Search Clear

HighWire
Stanford University

FOR RESEARCHERS | FOR LIBRARIANS | FOR PUBLISHERS

Advanced Search
Browse
- By Title
- By Publisher
- By Topic

Personalize & Alerts
Research Tools
Info, Lists & Links

SEARCH

— Minimize search options

Anywhere in Text ( ) any (•) all ( ) phrase

Title & Abstract only ( ) any (•) all ( ) phrase

Title only ( ) any (•) all ( ) phrase

Authors e.g. Smith, JS; Jones, D

Citation Year Vol Page

Filter by

Dates Jan 1753 through Sep 2014

(•) HighWire-hosted content only ( ) Include PubMed ( ) My Favorites only (sign in)

[ ] Reviews only

SEARCH

BROWSE

Browse HighWire-hosted content by: ▶ Title ▶ Publisher ▶ Topic

Personalize

More

Tailor your discovery experience with these options

- Table of content alerts
- Citation alerts
- Keyword alerts
- PDA alerts
- My Favorites

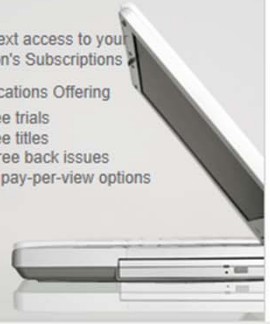
Research Tools

More

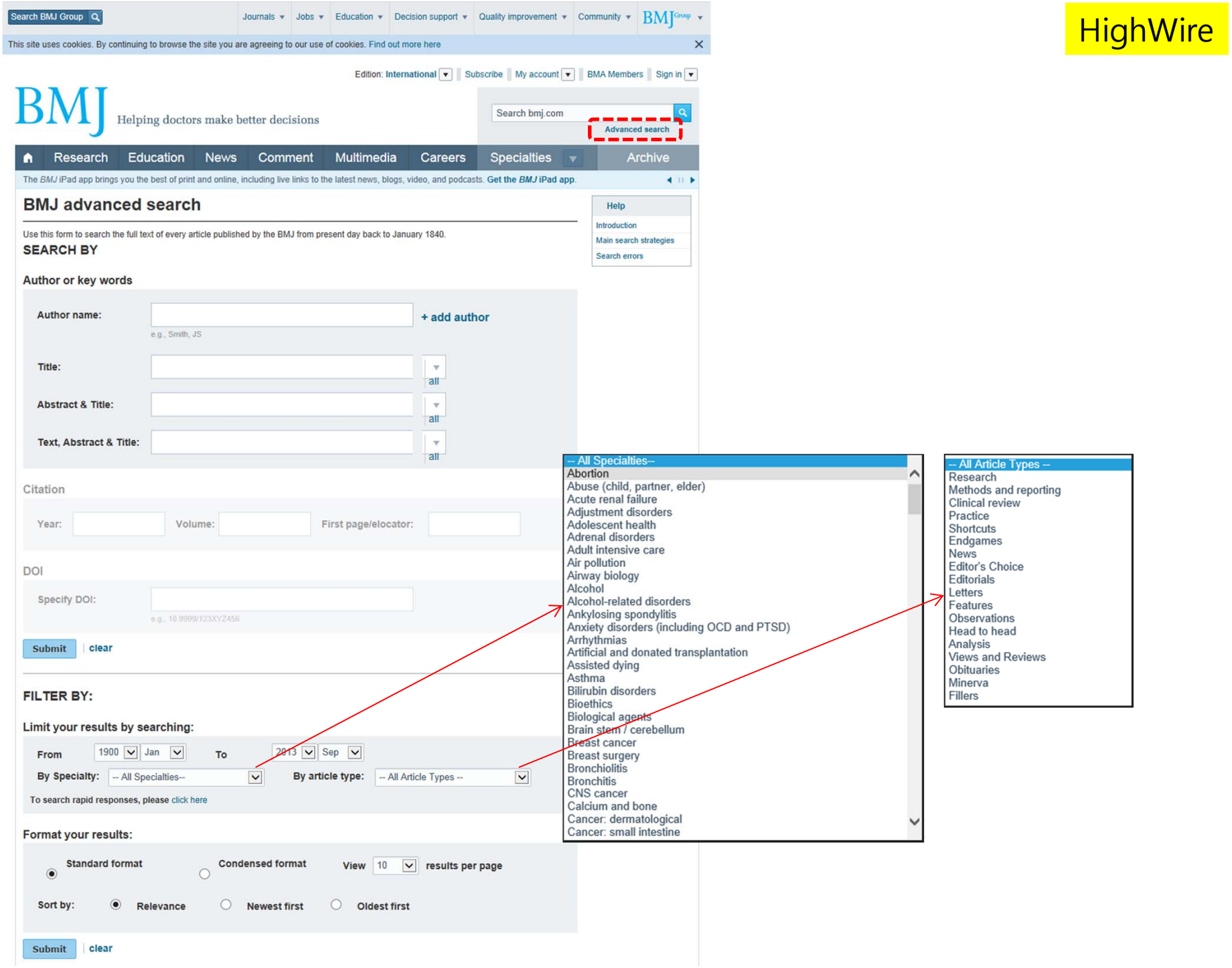
Advanced tools for research:

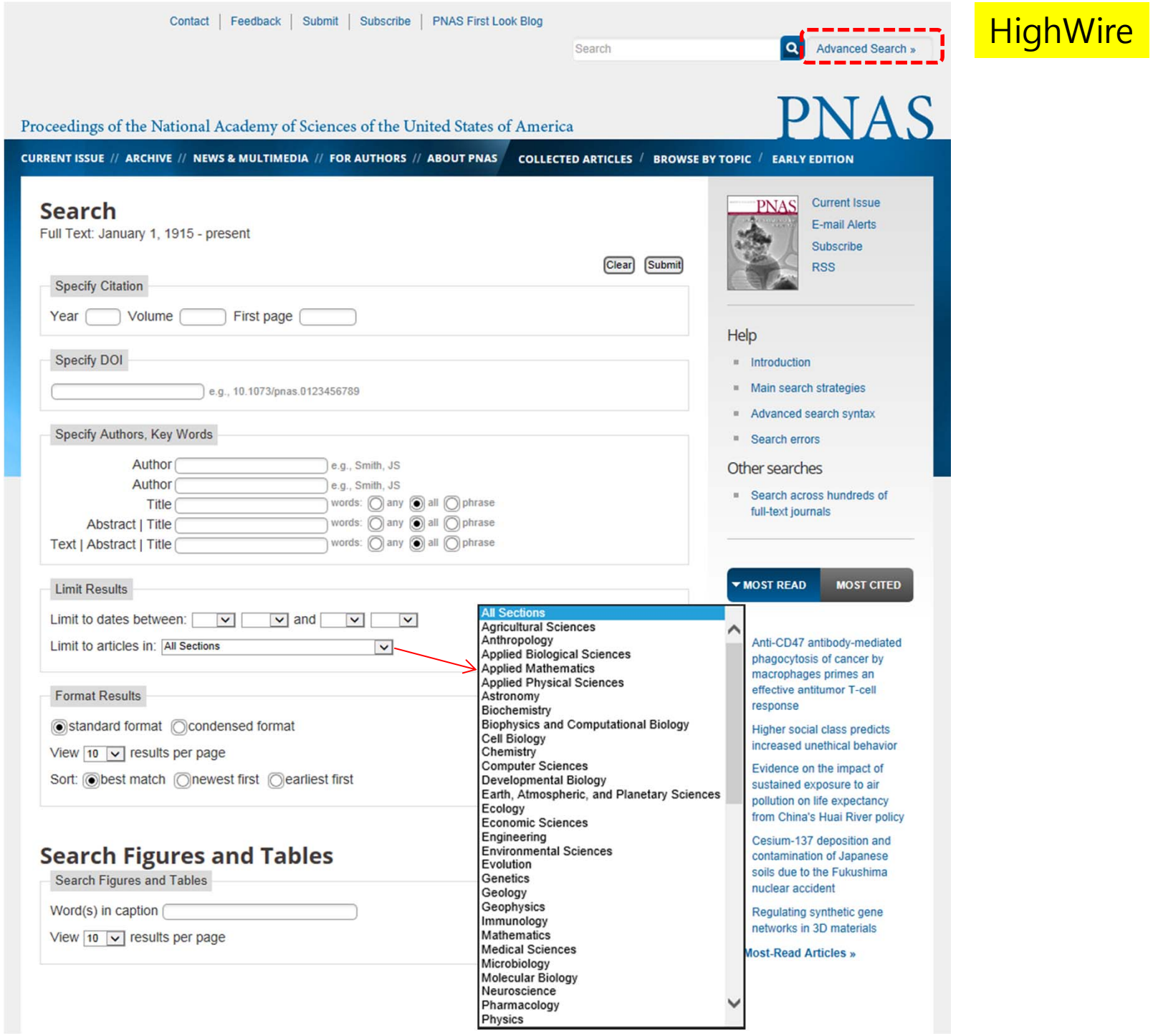
- ▶ Citation map
- ▶ Keyword in context
- ▶ Matchmaker
- ▶ Instant Index
- ▶ Topic search
- ▶ Download to citation manager

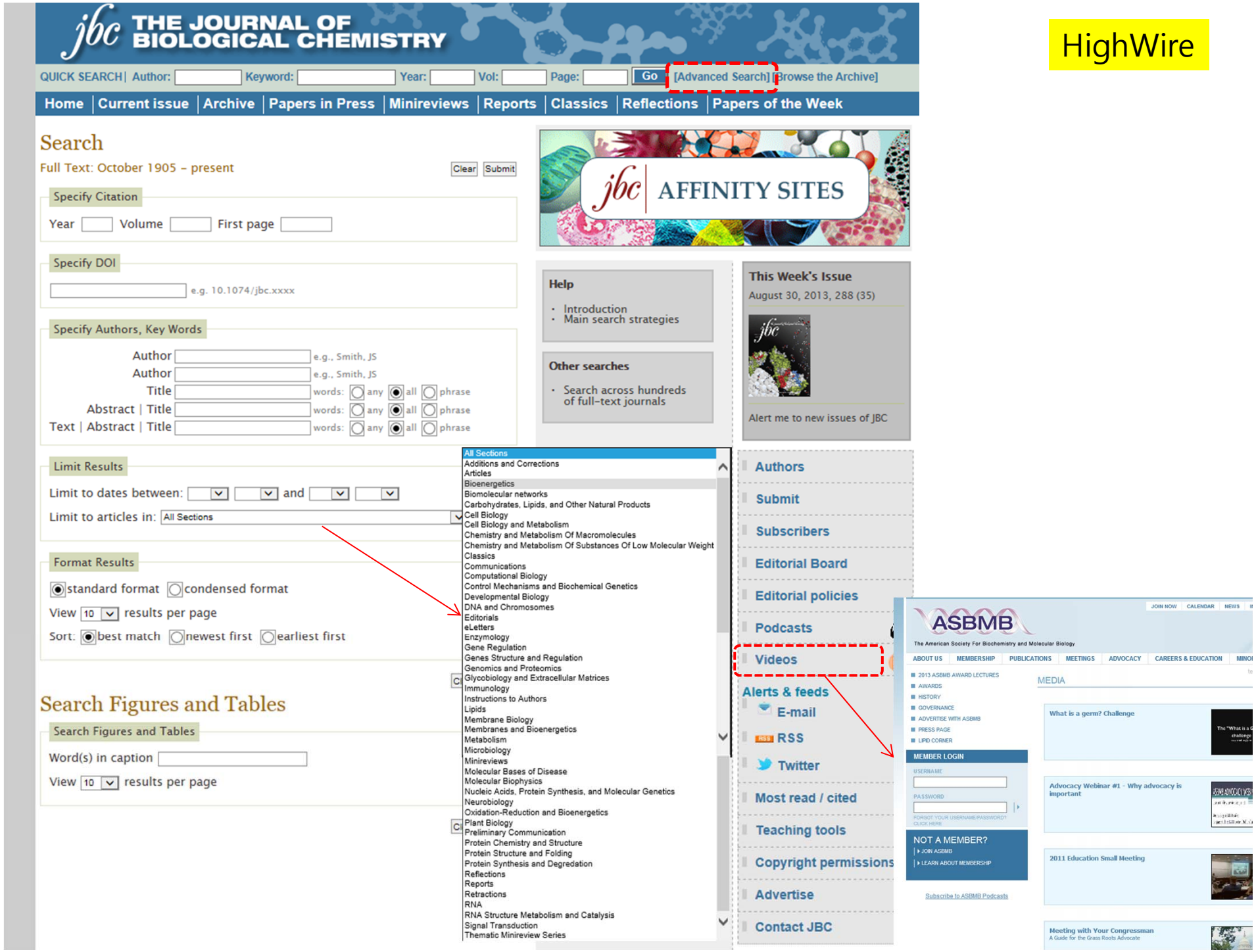
- ▶ Full-text access to your Institution's Subscriptions
- ▶ Publications Offering
  - 46 free trials
  - 83 free titles
  - 276 free back issues
  - 1367 pay-per-view options



A division of the Stanford University Libraries

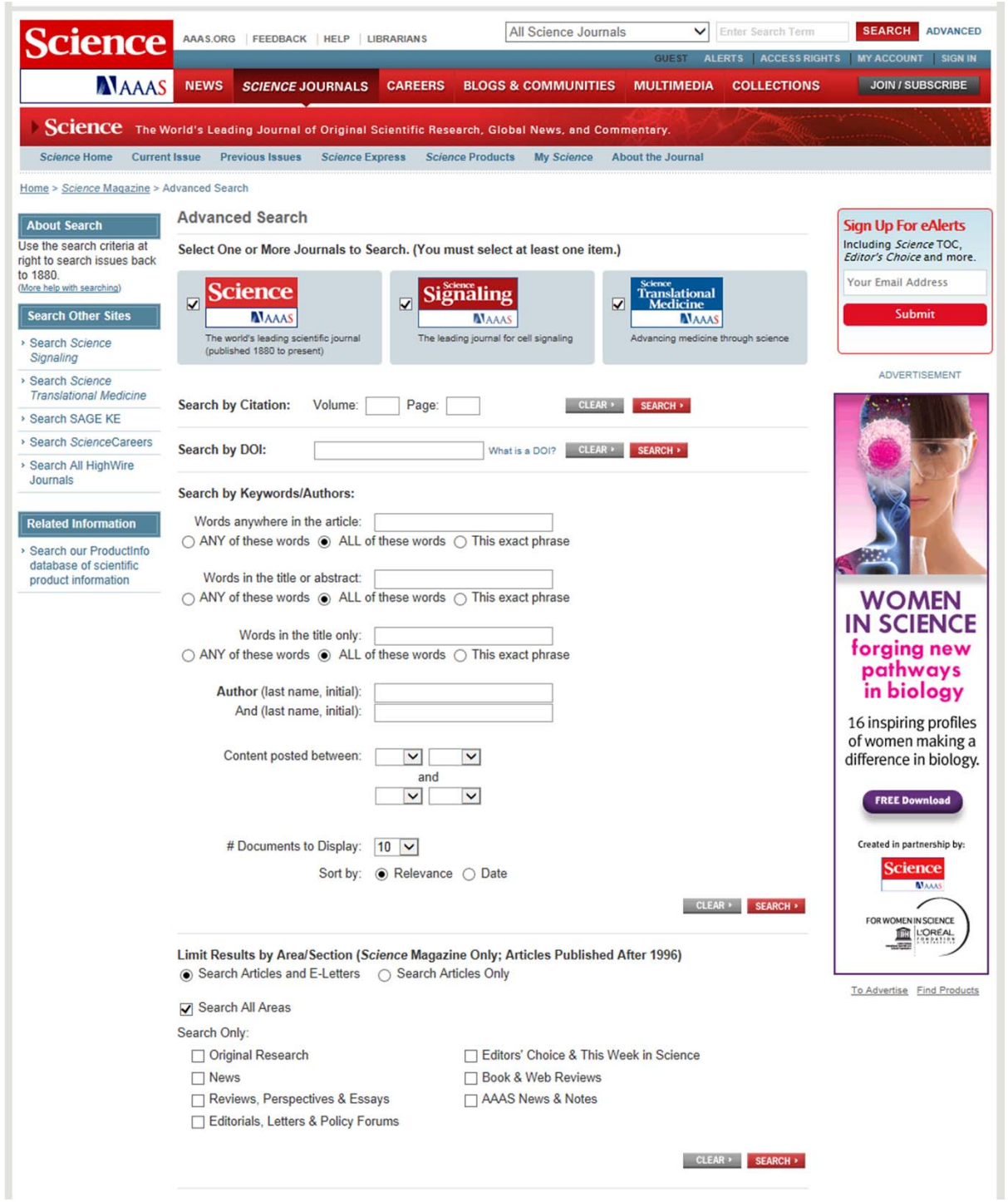

HighWire
Search BMJ Group
Journals
Jobs
Education
Decision support
Quality improvement
Community
This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out more here
Edition: International
Subscribe
My account
BMA Members
Sign in
BMJ
Helping doctors make better decisions
Search bmj.com
Advanced search
Research
Education
News
Comment
Multimedia
Careers
Specialties
Archive
The BMJ iPad app brings you the best of print and online, including live links to the latest news, blogs, video, and podcasts. Get the BMJ iPad app.
BMJ advanced search
Use this form to search the full text of every article published by the BMJ from present day back to January 1840.
SEARCH BY
Help
Introduction
Main search strategies
Search errors
Author or key words
Author name:
+ add author
e.g., Smith, JS
Title:
Abstract & Title:
Text, Abstract & Title:
all
Citation
Year:
Volume:
First page/elocator:
DOI
Specify DOI:
e.g., 10.9999/123XYZ456
Submit
clear
FILTER BY:
Limit your results by searching:
From
1900
Jan
To
2013
Sep
By Specialty:
-- All Specialties--
By article type:
-- All Article Types --
To search rapid responses, please click here
Format your results:
Standard format
Condensed format
View
10
results per page
Sort by:
Relevance
Newest first
Oldest first
Submit
clear
-- All Specialties--
Abortion
Abuse (child, partner, elder)
Acute renal failure
Adjustment disorders
Adolescent health
Adrenal disorders
Adult intensive care
Air pollution
Airway biology
Alcohol
Alcohol-related disorders
Ankylosing spondylitis
Anxiety disorders (including OCD and PTSD)
Arrhythmias
Artificial and donated transplantation
Assisted dying
Asthma
Bilirubin disorders
Bioethics
Biological agents
Brain stem / cerebellum
Breast cancer
Breast surgery
Bronchiolitis
Bronchitis
CNS cancer
Calcium and bone
Cancer: dermatological
Cancer: small intestine
-- All Article Types --
Research
Methods and reporting
Clinical review
Practice
Shortcuts
Endgames
News
Editor's Choice
Editorials
Letters
Features
Observations
Head to head
Analysis
Views and Reviews
Obituaries
Minerva
Fillers


HighWire
Contact | Feedback | Submit | Subscribe | PNAS First Look Blog
Search
Advanced Search »
Proceedings of the National Academy of Sciences of the United States of America
PNAS
CURRENT ISSUE // ARCHIVE // NEWS & MULTIMEDIA // FOR AUTHORS // ABOUT PNAS
COLLECTED ARTICLES / BROWSE BY TOPIC / EARLY EDITION
Search
Full Text: January 1, 1915 - present
Clear
Submit
Specify Citation
Year
Volume
First page
Specify DOI
e.g., 10.1073/pnas.0123456789
Specify Authors, Key Words
Author
e.g., Smith, JS
Author
e.g., Smith, JS
Title
words: any all phrase
Abstract | Title
words: any all phrase
Text | Abstract | Title
words: any all phrase
Limit Results
Limit to dates between:
and
Limit to articles in:
All Sections
Format Results
standard format
condensed format
View 10 results per page
Sort: best match newest first earliest first
Search Figures and Tables
Search Figures and Tables
Word(s) in caption
View 10 results per page
All Sections
Agricultural Sciences
Anthropology
Applied Biological Sciences
Applied Mathematics
Applied Physical Sciences
Astronomy
Biochemistry
Biophysics and Computational Biology
Cell Biology
Chemistry
Computer Sciences
Developmental Biology
Earth, Atmospheric, and Planetary Sciences
Ecology
Economic Sciences
Engineering
Environmental Sciences
Evolution
Genetics
Geology
Geophysics
Immunology
Mathematics
Medical Sciences
Microbiology
Molecular Biology
Neuroscience
Pharmacology
Physics
Current Issue
E-mail Alerts
Subscribe
RSS
Help
Introduction
Main search strategies
Advanced search syntax
Search errors
Other searches
Search across hundreds of full-text journals
MOST READ
MOST CITED
Anti-CD47 antibody-mediated phagocytosis of cancer by macrophages primes an effective antitumor T-cell response
Higher social class predicts increased unethical behavior
Evidence on the impact of sustained exposure to air pollution on life expectancy from China's Huai River policy
Cesium-137 deposition and contamination of Japanese soils due to the Fukushima nuclear accident
Regulating synthetic gene networks in 3D materials
Most-Read Articles »


THE JOURNAL OF BIOLOGICAL CHEMISTRY
QUICK SEARCH | Author: Keyword: Year: Vol: Page: Go [Advanced Search] [Browse the Archive]
Home | Current issue | Archive | Papers in Press | Minireviews | Reports | Classics | Reflections | Papers of the Week
Search
Full Text: October 1905 – present
Clear Submit
Specify Citation
Year Volume First page
Specify DOI
e.g. 10.1074/jbc.xxxx
Specify Authors, Key Words
Author e.g., Smith, JS
Author e.g., Smith, JS
Title words: any all phrase
Abstract | Title words: any all phrase
Text | Abstract | Title words: any all phrase
Limit Results
Limit to dates between: and
Limit to articles in: All Sections
Format Results
standard format condensed format
View 10 results per page
Sort: best match newest first earliest first
Search Figures and Tables
Search Figures and Tables
Word(s) in caption
View 10 results per page
AFFINITY SITES
Help
Introduction
Main search strategies
Other searches
Search across hundreds of full-text journals
This Week's Issue
August 30, 2013, 288 (35)
Alert me to new issues of JBC
All Sections
Additions and Corrections
Articles
Bioenergetics
Biomolecular networks
Carbohydrates, Lipids, and Other Natural Products
Cell Biology
Cell Biology and Metabolism
Chemistry and Metabolism Of Macromolecules
Chemistry and Metabolism Of Substances Of Low Molecular Weight
Classics
Communications
Computational Biology
Control Mechanisms and Biochemical Genetics
Developmental Biology
DNA and Chromosomes
Editorials
eLetters
Enzymology
Gene Regulation
Genes Structure and Regulation
Genomics and Proteomics
Glycobiology and Extracellular Matrices
Immunology
Instructions to Authors
Lipids
Membrane Biology
Membranes and Bioenergetics
Metabolism
Microbiology
Minireviews
Molecular Bases of Disease
Molecular Biophysics
Nucleic Acids, Protein Synthesis, and Molecular Genetics
Neurobiology
Oxidation-Reduction and Bioenergetics
Plant Biology
Preliminary Communication
Protein Chemistry and Structure
Protein Structure and Folding
Protein Synthesis and Degredation
Reflections
Reports
Retractions
RNA
RNA Structure Metabolism and Catalysis
Signal Transduction
Thematic Minireview Series
Authors
Submit
Subscribers
Editorial Board
Editorial policies
Podcasts
Videos
Alerts & feeds
E-mail
RSS
Twitter
Most read / cited
Teaching tools
Copyright permissions
Advertise
Contact JBC
ASBMB
The American Society For Biochemistry and Molecular Biology
ABOUT US MEMBERSHIP PUBLICATIONS MEETINGS ADVOCACY CAREERS & EDUCATION
MEDIA
MEMBER LOGIN
NOT A MEMBER?
What is a germ? Challenge
Advocacy Webinar #1 - Why advocacy is important
2011 Education Small Meeting
Meeting with Your Congressman

HighWire

HighWire


Science
AAAS.ORG | FEEDBACK | HELP | LIBRARIANS
All Science Journals
Enter Search Term
SEARCH
ADVANCED
GUEST | ALERTS | ACCESS RIGHTS | MY ACCOUNT | SIGN IN
AAAS
NEWS
SCIENCE JOURNALS
CAREERS
BLOGS & COMMUNITIES
MULTIMEDIA
COLLECTIONS
JOIN / SUBSCRIBE
Science The World's Leading Journal of Original Scientific Research, Global News, and Commentary.
Science Home | Current Issue | Previous Issues | Science Express | Science Products | My Science | About the Journal
Home > Science Magazine > Advanced Search
About Search
Use the search criteria at right to search issues back to 1880.
(More help with searching)
Search Other Sites
Search Science Signaling
Search Science Translational Medicine
Search SAGE KE
Search ScienceCareers
Search All HighWire Journals
Related Information
Search our ProductInfo database of scientific product information
Advanced Search
Select One or More Journals to Search. (You must select at least one item.)
Science
The world's leading scientific journal (published 1880 to present)
Science Signaling
The leading journal for cell signaling
Science Translational Medicine
Advancing medicine through science
Search by Citation: Volume: Page: CLEAR SEARCH
Search by DOI: What is a DOI? CLEAR SEARCH
Search by Keywords/Authors:
Words anywhere in the article:
ANY of these words ALL of these words This exact phrase
Words in the title or abstract:
ANY of these words ALL of these words This exact phrase
Words in the title only:
ANY of these words ALL of these words This exact phrase
Author (last name, initial):
And (last name, initial):
Content posted between:
and
Documents to Display: 10
Sort by: Relevance Date
CLEAR SEARCH
Limit Results by Area/Section (Science Magazine Only; Articles Published After 1996)
Search Articles and E-Letters Search Articles Only
Search All Areas
Search Only:
Original Research
News
Reviews, Perspectives & Essays
Editorials, Letters & Policy Forums
Editors' Choice & This Week in Science
Book & Web Reviews
AAAS News & Notes
CLEAR SEARCH
Sign Up For eAlerts
Including Science TOC, Editor's Choice and more.
Your Email Address
Submit
ADVERTISEMENT
WOMEN IN SCIENCE
forging new pathways in biology
16 inspiring profiles of women making a difference in biology.
FREE Download
Created in partnership by:
Science
FOR WOMEN IN SCIENCE
L'ORÉAL
To Advertise Find Products

About Synapse
Overview
Help
Disclaimer

KoreaMed
KoMCI Korean Medical Citation Index
Korean Medical Journal Information
KAMJE KOREAN ASSOCIATION OF MEDICAL JOURNAL EDITORS
WorldWideScience.org The Global Science Gateway
crosscheck Powered by iThenticate depositor
crossref MEMBER CROSSREF.ORG THE CITATION LINKING BACKBONE
crossref CITEDBY

Powered by KoreaMed Synapse

Advanced Search

Term(s):

	All Fields	AND
	Full Text	AND
	Abstract, Title, Keywords	AND
	DOI	

Journals:

- All Journals -
Allergy Asthma & Respiratory Disease
Allergy, Asthma & Immunology Research
Anatomy & Cell Biology
Annals of Clinical Microbiology

+ Hold down the Ctrl key to select multiple journals.

Year(s): All Years / 1963 to Present

Languages: All / English / Korean

- [ ] Articles Cited by Synapse crossref Articles.
- [ ] Articles Cited by KoMCI Articles.
- [x] Articles with Supplementary Materials

Find Articles Clear

About Synapse
Overview
Help
Disclaimer

Results

(Supplementary Material [Filter])

Pub Date Sort Display: 20

Items 1-20 of 114 Page 1 of 6 Next

Clinical approach to quality of life in children with end-stage renal disease

Cho MH.

Korean J Pediatr. 2013 Aug;56(8):323-326. English. Review Article. Open Access

Published online 2013 August 27. http://dx.doi.org/10.3345/kjp.2013.56.8.323

ABSTRACT ARTICLE PUBREADER PDF FIGURES+TABLES REFERENCES SUPPL MATERIALS | Links to KoreaMed Journal

Pocket flashlight-elicited Quincke pulse for aortic dissection diagnosis

Mizuno A, Niwa K.

Korean J Intern Med. 2013 Sep;28(5):631-631. English. Image of Interest. Open Access

Published online 2013 August 14. http://dx.doi.org/10.3904/kjim.2013.28.5.631

ABSTRACT ARTICLE PUBREADER PDF FIGURES+TABLES REFERENCES SUPPL MATERIALS | Links to KoreaMed Journal

Screening of Dihydropyrimidine Dehydrogenase Genetic Variants by Direct Sequencing in Different Ethnic Groups

Shin JG, Cheong HS, Kim JY, Kim LH, Han CS, Kim JO, Kim HD, Kim YH, Chung MW, Han SY, Shin HD.

J Korean Med Sci. 2013 Aug;28(8):1129-1133. English. Original Article. Open Access

Published online 2013 July 31. http://dx.doi.org/10.3346/jkms.2013.28.8.1129

ABSTRACT ARTICLE PUBREADER PDF FIGURES+TABLES REFERENCES SUPPL MATERIALS | Links to KoreaMed Journal

Associations between Cigarette Smoking and Total Mortality Differ Depending on Serum Concentrations of Persistent Organic Pollutants among the Elderly

Lee YM, Bae SG, Lee SH, Jacobs DR, Lee DH.

J Korean Med Sci. 2013 Aug;28(8):1122-1128. English. Original Article. Open Access

Published online 2013 July 31. http://dx.doi.org/10.3346/jkms.2013.28.8.1122

ABSTRACT ARTICLE PUBREADER PDF FIGURES+TABLES REFERENCES SUPPL MATERIALS | Links to KoreaMed Journal

Mutant p53-Notch1 Signaling Axis Is Involved in Curcumin-Induced Apoptosis of Breast Cancer Cells

Bae YH, Ryu JH, Park HJ, Kim KR, Wee HJ, Lee OH, Jang HO, Bae MK, Kim KW, Bae SK.

Korean J Physiol Pharmacol. 2013 Aug;17(4):291-297. English. Original Article. Open Access

Published online 2013 July 30. http://dx.doi.org/10.4196/kjpp.2013.17.4.291

ABSTRACT ARTICLE PUBREADER PDF FIGURES+TABLES REFERENCES SUPPL MATERIALS | Links to KoreaMed Journal

Intravenous fluid prescription practices among pediatric residents in Korea

Lee JM, Jung Y, Lee SE, Lee JH, Kim KH, Koo JW, Park YS, Cheong HI, Ha IS, Choi Y, Kang

NISO RP-15-2013

NISO RP-15-2013

Recommended Practices for Online Supplemental Journal Article Materials

January 2013

A Recommended Practice of the
National Information Standards Organization and
the National Federation of Advanced Information Services

A.2 Roles and Responsibilities Related to Supplemental Materials

Many parties play a role in maintaining the record of scholarship and supplemental material. For convenience in this document, we have separated the parties into two segments: Primary Publishing and Related Parties, and described their responsibilities in the two tables below.

A.2.1 Primary Publishing

Publisher	Editor	Peer Reviewer	Author(s)
Educate other parties about requirements for posting and curating content.	Set editorial policy.	Follow journal guidelines for reviewing Supplemental Materials.	Be aware of Journal expectations and follow them to the best of their ability.
Provide appropriate resources for managing supplemental content.	Make final decisions on content.	Inform the editor in a timely fashion if unable to review any content.	Provide context and demonstrate that the Supplemental Materials add substance to scholarship in the field.
Provide systems and policies to facilitate the decision-making process.	Determine whether supplemental content is integral to the article.[3]	Alert the editor to instances in which integral data are not provided, but are needed to understand the manuscript.	Be responsible for providing Supplemental Materials at the same level of quality as the article.
Be clear about the level of delivery and preservation that can be provided.	Set expectations for acceptable content with an understanding of what is entailed in vetting, delivering, and preserving content.		Be aware of trusted repositories in the field and knowledgeable about their practices.
Encourage authors to post Additional Content in endorsed archives that ensure good preservation and provide bidirectional linking to the journal.[4]	Encourage authors to post Additional Content in endorsed archives that ensure good preservation and provide bidirectional linking to the journal.[4]		Be aware of and adhere to policies of your institution and funder for sharing of research data.

A.2.2 Related Parties

Libraries	Abstracting and Indexing Services	Repository Administrators
May serve as a repository for the research done by university researchers.	Indicate the availability of Supplemental Materials if the journal publisher has provided clear indication they exist.	Make deposited content accessible by assigning persistent identifiers, such as a DOI or another unique identifier.
Include Supplemental Materials with journal article interlibrary loan when the journal publisher has provided clear indication they exist.	Include the formats and file types of Supplemental Material if the publisher has provided identifiable metadata.	Include DOIs for any journal articles that link to content in their repository.
	Include the publisher-provided DOI or other identifier.	Manage bidirectional links between the deposited content and the article.

References

Article of the Future http://www.articleofthefuture.com

Journal of Neuroscience Editorial. August 11, 2010. Announcement Regarding Supplemental Material. J Neurosci 30(32):10599 –10600.

NISO and NFAIS. Recommended Practices for Online Supplementary Journal Article Materials. (NISO RP-15-2013). http://www.niso.org/apps/group_public/download.php/10055/RP-15-2013_Supplemental_Materials.pdf

Marcial LH and Hemminger BM. 2010. Scientific data repositories on the Web: An initial survey. JASIST, 61: 2029–2048. http://onlinelibrary.wiley.com/doi/10.1002/asi.21339/pdf

http://www.koreamed.org
http://synapse.koreamed.org

Thank you!

끝까지 들어주셔서 고맙습니다.