## JATS XML for PubMed Central, ScienceCentral

M2community By Younsang Cho

- 1. Introduction of PubMed Central, ScienceCentral
- 2. Add a Journal to PubMed Central, ScienceCentral and

**Introduction Platform** 

- 3. JATS XML and Structure of XML
- 4. Applications of XML
- 5. JATS XML to conversion

## PubMed Central (PMC)

A free archive of biomedical and life sciences journal literature at the U.S. National Institutes of Health's National Library of Medicine (NIH/NLM).

- ✓ In keeping with NLM's legislative mandate to collect and preserve the biomedical literature
- ✓ PMC serves as a digital counterpart to NLM's extensive print journal collection.
- ✓ Launched in February 2000
- ✓ PMC was developed and is managed by NLM's National Center for Biotechnology Information (NCBI).

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✓ Full text Platform based on JATS XML

### PubMed

Available to search database of biomedical citations and abstracts

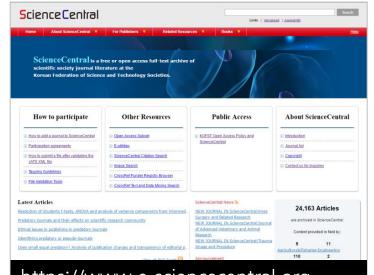


## ScienceCentral

✓ Launched in December 2013

ScienceCentral is a platform of free or open access full text database based on JATS XML of scientific society journal literature provided by the Korean Federation of Science and Technology Societies (KOFTS).

- To increase the visibility of non-profit scientific societies or institutional journals globally
- Aims to promote human culture and civilization by providing invaluable scientific information freely and easily to all world scientists and citizens.
- At least bibliographic information, abstract, tables, figures and references should be in English although the language of text is not English.



https://www.e-sciencecentral.org

 Chemical structures and mathematical formula should also meet the XML presentation according to ChemML and MathML, respectively. Tables should be in XML format.

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## Add a journal to PMC (1/3)

### 1. Scientific Quality Standard

### 2. Technical Requirements

### Files required for each deposited article:

- 1. A separate XML data file for the full text of each article.
- 2. The original high-resolution digital image files for all figures in each article.
- 3. A PDF, if one exists, in addition to the XML version (but not as the only form.)
- 4. Supplementary data files (e.g., spreadsheets or video files) available with the article.

## Add a journal to PMC (2/3)

### 3. The Evaluation and Setup Process

### Step1. Publisher Application

✓ <u>https://www.ncbi.nlm.nih.gov/pmc/publisherportal/</u>

### Step2. Initial Application Screening

✓ Journals that do not pass the initial application screening for any of the above reasons are eligible to reapply in 24 months.

### Step3. Scientific Quality Review

- ✓ After a review of the journal information, policies, and content, PMC will inform the publisher whether or not the journal meets PMC's scientific quality standard.
- ✓ Only English journal

### Step 4. Technical Evaluation

The publisher submits a representative set of sample files, which are evaluated to ensure that the journal's data meets PMC's technical quality standards. Keep in mind that:

### Step 5: Pre-Production

✓ PMC will ask the publisher to complete a formal PMC Participation Agreement with NLM. Release to Live

### Step 6: Release to Live

✓ NLM countersigns the publisher's PMC Participation Agreement and releases the journal to the PMC public site with the publisher's approval.

### 4. Reapplications

 Any reapplication to PMC will be processed as a new application and will be subject to initial quality screening, scientific quality review, and technical evaluation (when applicable).

## Add a journal to ScienceCentral (1/2)

ScienceCentral comprises scientific, technical, engineering, agricultural, and medical journals.

### The application process is as follows:

### Step 1. Request for inclusion to ScienceCentral

- ✓ The journal publisher or copyright owner should request inclusion in ScienceCentral with a application form.
- http://www.e-sciencecentral.org/pub/pubinfo/application.php

### Step 2. Review of the journal's scientific quality

- ✓ A journal is eligible for inclusion in ScienceCentral after the KOFST's Advisory Committee
- ✓ Included in ScienceCentral, a journal should be peer-reviewed
- ✓ Include Roman character bibliographic information, abstracts, and references.
- ✓ English journal or local language.

## Add a journal to ScienceCentral (2/2)

## Step 3. Technical evaluation of Journal Article Tag Suite (JATS) XML (eXtensible Markup Language)

 The publisher provides ScienceCentral with the full text XML in a JATS XML format. ScienceCentral provides the ftp site to which it should be submitted.

### Step 4. ScienceCentral Participation Agreements

✓ If the journal passes the data evaluation, ScienceCentral asks the publisher to complete two copies of the ScienceCentral Participation Agreement with the Korean Federation of Science and Technology Societies (KOFST).

## PMC, ScienceCentral -Journal list

### PMC- Journal repository

S NCBI PMO Vational Inst Journal List

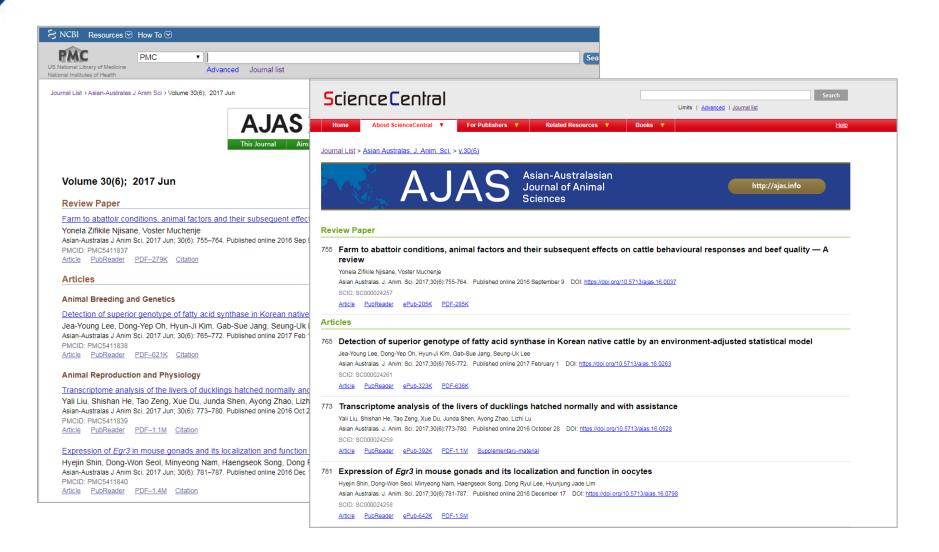
al Library of Medi stitutes of Health	Advanced Journal list										
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ch for journa	ls Search		Journal List								
ide predeces	sor titles Show predecessor titles		Science	Central Jo	urnals						
A-B C-H I-M N-S T-Z			Coords for in	unale							
ISSN	Title	Volume Latest	Search for jo	umais			Search				
<u>50-7416</u>	The AAPS Journal (v.1;1999)	<u>v.18(3)</u> May 2016									
30-9932	AAPS PharmSciTech	<u>v.17(2)</u> Apr 2016	Α-	в	C-H	I-M	N-S	T-Z		New	Special Collections
26-3253	ACG Case Reports Journal	<u>v.4</u> 2017	Search this		ISSN Title			Volumes in ScienceCentral		Participa	
4-7943	ACS Central Science	<u>v.3(5)</u> May 24, 2017	Journal	ISSN			Latest	eCentral First	Open Access	Level	
<u>48-7193</u>	ACS Chemical Neuroscience	<u>v.5(8)</u> Aug 20, 2014	Bopenter	4000 4407	The Assessment of	The Asymptotics		<u>v. 34(2)</u>	v.33	Vee	5.0
8-5875	ACS Medicinal Chemistry Letters	<u>v.8(6)</u> Jun 8, 2017		1229-1137 The Acupuncture			<u>May 2017</u>	May 2017 2016 Yes		Full	
<u>72-9145</u>	Acta Biochimica et Biophysica Sinica	v.49(5) May 2017	31 _MCM	1226-2617	5-2617 Algae		<u>v. 32(2)</u>	v.31	Yes	Full	
3-7931	Acta Biomaterialia Odontologica Scandinavica	<u>v.3(1)</u> Jan 2017	D)S(U	1220 2011				<u>Jun 2017</u>	2016		
11-6842	Acta Cardiologica Sinica	<u>v.33(3)</u> May 2017	apm 3	<u>1975-5171</u>	Anesthesia and Pain	Medicine		<u>v. 12(2)</u>	v.11 2016	Yes	Full
2-5192	Acta Crystallographica Section B. Structural Science, Crystal Engineering and Materials	v.73(Pt 1) Feb 1, 2017						<u>Apr 2017</u>	2016		
<u>56-9890</u>	Acta Crystallographica Section E: Crystallographic Communications (v.64:2008)	<u>v.73(Pt 6)</u> Jun 1, 2017	apem	2287-1012	Annals of Pediatric E	ndocrinology & Metabolism		<u>v. 22(1)</u> <u>Mar 2017</u>	v.18 2013	Yes	Full
53-2733	Acta Crystallographica. Section A. Foundations and Advances	v.73(Pt 3) May 1, 2017	Aug Sur					<u>v. 47(1)</u>			
53-2296	Acta Crystallographica. Section C. Structural Chemistry	v.73(Pt 3) Mar 1, 2017		2287-5123	Applied Microscopy				v.44 2014	Yes	Full
<u>9-7983</u>	Acta Crystallographica. Section D. Structural Biology	v.73(Pt 6) Jun 1, 2017	and the second se				<u>v. 26(2)</u>	v.25			
<u>53-230X</u>	Acta Crystallographica. Section F, Structural Biology Communications (v.61;2005)	<u>v.73(Pt 6)</u> Jun 1, 2017		2288-6559	Applied Science and	Convergence Technology		<u>Mar 2017</u>	2016	Yes	Full
			ARMS	2383-5257	Archieves of Reconst	ructive Microsurgery		<u>v. 25(2)</u> <u>Nov 2016</u>	v.24 2015	Yes	Full
			APS	2234-6163	Archives of Plastic St	1000		<u>v. 41(6)</u> Nov 2014	v.39 2012	Yes	Full

#### 10 The 4th Asian Science Editors' Conference and Workshop 2017

## PMC, ScienceCentral - Archives

PMC- A		es							
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			ian Journal of Animal Scienc 25 to 30; 2012 to 2017 v.30(2); 149–283	es		AJAJ	Sciences		intp//ejds.into
	Vol. 30 2017	2017 Jan v.30(4): 449–601 2017 Apr	2017 Feb v.30(5): 603–754 2017 May	v		Asia	an-Australasian Journal of An Vols. 25 to 30; 2012 to 2		
	Vol. 29 2016	v.29(1): 1–157 2016 Jan	v.29(2): 159–306 2016 Feb	v	Vol.30 2017	<u>v.30 (1): 1-132</u> Jan 2017 v.30 (5): 603-754	<u>v.30 (2): 149-283</u> <u>Feb 2017</u> <u>v.30 (6): 755-906</u>	<u>v.30 (3): 299-445</u> <u>Mar 2017</u>	<u>v.30 (4): 449-601</u> <u>Apr 2017</u>
		v.29(4): 457–605 2016 Apr v.29(7): 909–1064 2016 Jul	v.29(5): 607–758 2016 May v.29(8): 1065–1213 2016 Aug	v v.2	Vol.29 2016	<u>May 2017</u> <u>v.29 (1): 1-157</u> Jan 2016	<u>Jun 2017</u> <u>v 29 (2): 159-306</u> Feb 2016	<u>v.29 (3): 307-456</u> <u>Mar 2016</u>	v.29 (4): 457-605 Apr 2016
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Abstract			Go to: 🕑	Report on the 10th International Conference of the Asian Clinical Oncology Society (ACOS 2012). [Gan To Kagaku Ryoho. 2013]
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## ScienceCentral Viewer tools

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Original Article         Sci Ed 2017; 4(1): 12-17.         Published online: 20 February 2017         DOI: https://doi.org/10.6087/kcse.83         Increased number of papers co-authored by professor and his student and social sciences journals published in Korea         Rae Seong Hong <sup>1</sup> , Eun Seong Hwang <sup>2</sup> <sup>1</sup> Department of Korean Language and Literature, University of Seob, Seoul, Korea	Article   a PDF(172K)   PubReader   PDF(172K)   Download Citation Share
<sup>2</sup> Department of Life Science, University of Seoul, Seoul, Korea Correspondence to Eun Seong Received 29 January 2017	PubReader
Copyright © Korean Council of Science Editors This is an open access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http:/// licenses/by-nc/4.o/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is	
Abstract	
Humanities and social sciences studies in Korea have remarkably low rates of co-authorship bet students. We chose a bibliometrics-based approach to characterize changes in the ratio of joint professors and students. Articles classified in the humanities and social sciences sectors that we registered in the Korean Citation Index during 2 phases over a 10-year period—2004 to 2006 (p 2013 (phase 2)—were used as the main source for the analysis. The study results can be summa the overall number of co-authored articles drastically increased from phase 1 to phase 2: the pe	authorship between re published in journals phase 1) and 2011 to rrized as follows: first,

## Search at Google scholar

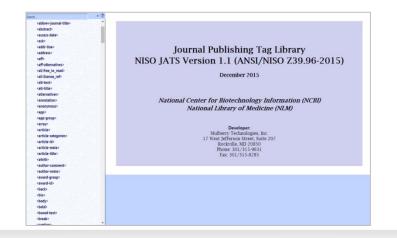
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cholar	9 results (0.03 sec)	
All versions	[HTML] Silage preparation and fermentation quality of natural grasses treated with lactic acid bacteria and cellulase in meadow steppe and typical steppe M Hou, G Gentu, T Liu, Y Jia, Y Cai - Asian-Australasian journal of, 2017 - ncbi.nlm.nih.gov Objective In order to improve fermentation quality of natural grasses, their silage preparation and fermentation quality in meadow steppe (MS) and typical steppe (TS) were studied. Methods The small-scale silages and round bale silages of mixed natural grasses in both Rehated and the Scale Silages and round bale silages of mixed natural grasses in both	[HTML] nih.gov
	(HTML) Silage preparation and fermentation quality of natural grasses treated with lactic acid bacteria and cellulase in meadow steppe and typical steppe. M Hou, G Gentu, T Liu, Y Jia, Y Cai - Asian-Australasian journal of, 2017 - europepmc.org Objective In order to improve fermentation quality of natural grasses, their silage preparation and fermentation quality in meadow steppe (MS) and typical steppe (TS) were studied. Methods The small-scale silages and round bale silages of mixed natural grasses in both	[HTML] europepmc.org
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	Silage preparation and fermentation quality of natural grasses treated with lactic acid bacteria and cellulase in meadow steppe and typical steppe. M Hou, G Gentu, T Liu, Y Jia, Y Cai - Asian-Australasian journal of, 2017 - ncbi.nlm.nih.gov OBJECTIVE: In order to improve fermentation quality of natural grasses, their silage preparation and fermentation quality in meadow steppe (MS) and typical steppe (TS) were studied. METHODS: The small-scale silages and round bale silages of mixed natural Cite	

## 3. JATS XML and Structure of XML

## JATS XML

### What is JATS(Journal Article Tag Suite) XML ?

- ✓ year 2003 NLM 1.0
- ✓ year 2004 NLM 2.0
- ✓ year 2008 NLM 3.0
- ✓ year 2012 JATS 1.0 (NLM 3.1) ANSI/NISO Z39.96-2012
- ✓ December 2015 NISO JATS 1.1- ANSI/NISO Z39.96-2015
- ANSI (American National Standards Institute)
- NISO (National Information Standards Organization)
- Tag Sets
  - Journal Archiving and Interchange
  - ✓ Journal Publishing
  - $\checkmark$  Article Authoring
- JATS Extensions
  - ✓ Book Interchange Tag Suite (BITS)



## XML?

### • XML (Extensible Markup Language)?

- ✓ Stands for EXtensible Markup Language
- ✓ A markup language much like HTML
- $\checkmark$  Designed to carry data, but not to display data
- ✓ W3C Recommendation

Markup: A system for annotating a document in a way that is syntactically distinguishable from the text

### DTD (Document Type Definition)?

- ✓ Document definition
  - : Logical structure of document
- ✓ DTD component
  - 1. Element
  - 2. Attribute
  - 3. Value

Set a structure of three components and link t

## Merits and Demerits of XML

- Merit of XML
  - ✓ Simplicity
  - ✓ Compatibility
  - ✓ Extendability
  - ✓ Recognizable Context Information
  - $\checkmark$  Separation between Content and Expression
  - ✓ Simple Comparison and Calculation of Data

### Demerit of XML

- It is necessary to define too much to describe simple and special data.
- ✓ XML document is compatible because it is text file, but it forms big files and is slow at processing.

XML is data manipulation language that has many benefits compared to disadvantages, and it is easy to be interconverted and distributed.

## **Applications of XML**

## **Applications of XML**

### ✓ RDF (Resource Description Framework)

: Similar to classical conceptual modeling approaches (such as entity-relationship or class diagrams)

### ✓ RSS (Rich Site Summary)

: Called "feed", "web feed" or channel included in surmarized text and metadata like publishing date

### MathML (Mathematical Markup Language)

: Mathematical markup language, an application of XML for describing mathematical notations and capturing both its structure and content.

### ✓ ChemML (Chemical Markup Language)

: An approach to managing molecular information using tools such as XML and Java.

### ✓ XHTML (Extensible Hypertext Markup Language)

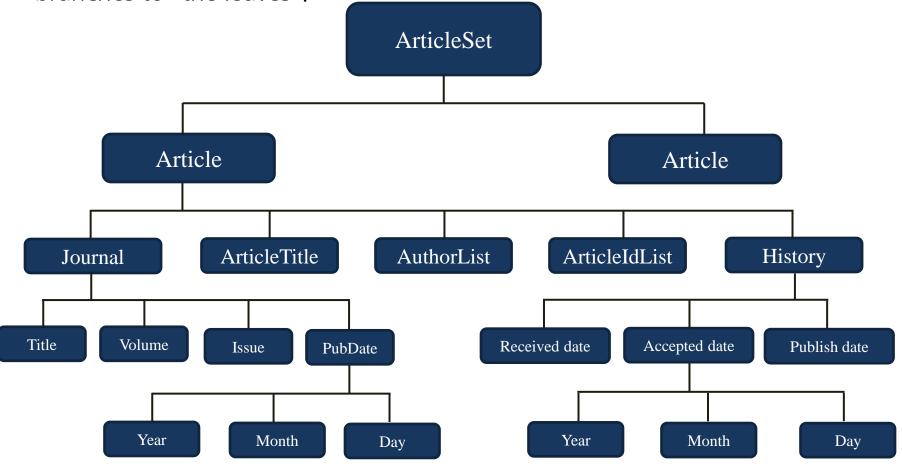
: A part of the family of XML markup languages

### ✓ SVG (Scalable Vector Graphics)

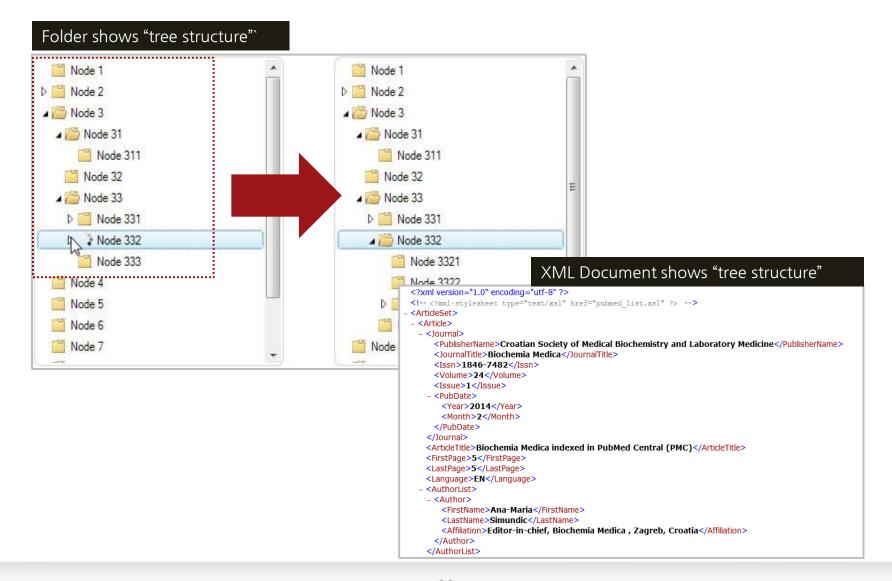
: An XML-based vector image format for two-dimensional graphics with support for interactivity and animation

## XML "Tree structure"

XML documents form a tree structure that starts with "the root" and branches to "the leaves".



## Example of XML "Tree structure"



## JATS - Journal Publishing Tag Library

#### Elements (263 elements) –June, 2017 At

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			Tes

	earch «	Journal Publishing Tag Library NISO JATS Version 1.1 (ANSI/NISO 239.9)
Elements	@target-type	National Center for Biotechnology Informa     National Library of Med
<abbrev></abbrev>	@toggle	
<abbrev-journal-title></abbrev-journal-title>	@underline-style	
<abstract></abstract>	@units	axml:lang Language
<access-date></access-date>	@valign @version	The language of the intellectual content of the element for which this is an attribute.
<ack></ack>	@vol	The value of this a tribute must conform to IETF RFC 5646 (http://tools.ietf.org/html/rfc5646). For
<addr-line></addr-line>	@width	most uses, a prima y-language subtag such as "fr" (French), "en" (English), "de" (German), or "zh"
<address></address>	@xlink:actuate	(Chinese) is sufficient. These values are <b>NOT</b> case sensitive, but current best practice uses all lower case. In addition to the primary language subtag, the value of this attribute may contain other subtags
<aff></aff>	@xlink:href @xlink:role	as well. Values for he various subtags (which can be used in certain combinations) can be obtained
<aff-alternatives></aff-alternatives>	@xlink:role @xlink:show	from the IANA Language Subtag Registry: http://www.iana.org/assignments/language-subtag-registry.
<ali:free_to_read></ali:free_to_read>	@xlink:title	Remarks
<ali:license ref=""></ali:license>	@xlink:type	Inheritance: The language value inherits down the tree, so an <code>@xml:lang</code> attribute names the
<alt-text></alt-text>	@ xml:base	language of the element and all its descendants, unless the descendant sets its own @xml:lang
<alt-title></alt-title>	exmittang exministali	attribute. The defa <sup>1</sup> It value of English ("en") is set at the top-level element, and can be overridden
<alternatives></alternatives>	@xmlns:mml	there or anywhere ower in the document.
<annotation></annotation>	@xmlns:xlink	Script and Language: In some languages, script codes are also critically important; for example, in Japanese, there is the need to express whether a name is in Kanji as opposed to in Kana (Hiragana or
<anonymous></anonymous>	@xmlns:xsi	Katakana) to deter the need to express whether a name is in Kanji as opposed to in Kana (rin again of Katakana) to deter the sort keys. Best practice is to use the full language-code-plus-script-code as the
<app></app>	@xml:space @x-size	value for @xml:lang. In our use of both language and script tagging as values for @xml:lang, we are following the IETF (Internet Engineering Task Force) best practice guideline: <i>Network Working Group</i>

```
{article article-type="research-article" dtd-version="1.1" xml:lang="ko"
<array>
<article>
      xmlns:mml="http://www.w3.org/1998/Math/MathML"
<article-cat
      xmlns:xlink="http://www.w3.org/1999/xlink"
<article-id:
<article-m
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<article-tit
<attrib>
<author-co
<author-no
<award-gro
      language code:
<award-id>
<back>
      Ex) xml:lang="ja-Hani" (Japanese written in Kanji [Hanzi, Hanja, Han]), "mn"
<bio>
      (Mongolian), "war" (Philippines), "vi" (Vietnamese), "zh" (Chinese),
<body>
<bold>
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## Structure of JATS XML

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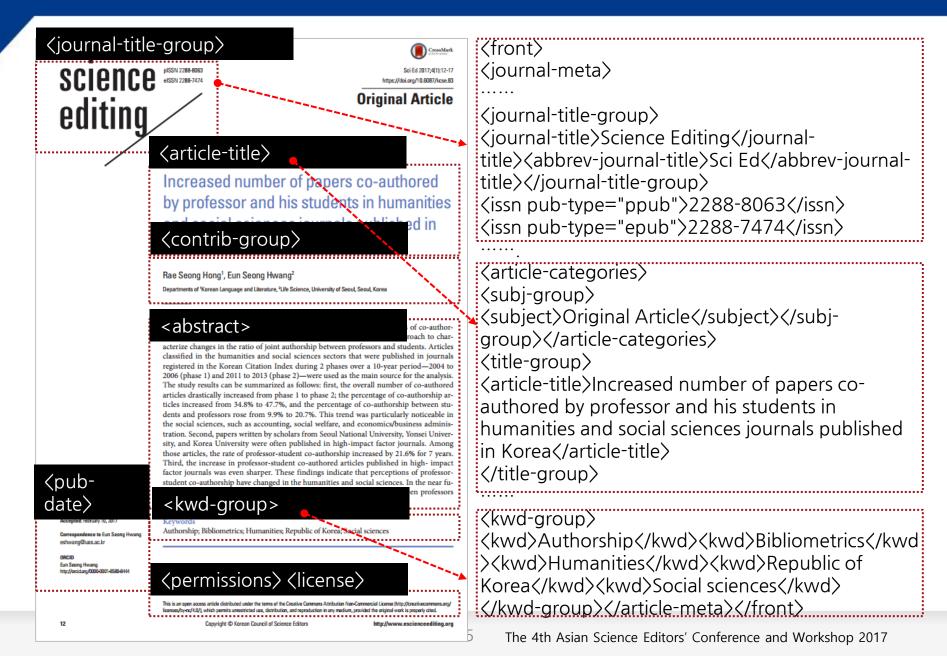
<journal meta></journal meta> <journal title></journal title > (issn):pISSn/eISSN</issn)</pre> <publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publisher></publi  $\langle article meta \rangle \langle / article meta \rangle$ <article-id pub-id-type></ article-id pub-id-</pre> type>  $\langle article categories \rangle \langle /article categories \rangle$ <title group></title group> <contrib-group> <name><surname></surname> <given-names></given-names></name> <aff>: 저자소속</aff> <pub-date pub-type> <permissions></permission> license-type></license-type></license-type></license-type></license-type></license-type></license-type> <abstract></abstract> <keyword></keyword>

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<sec-sec-type="conclusion"></sec>
<sec-sec-type="discuss"></sec>
<sec-sec-type="other"></sec>

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## JATS XML elements (front)



## JATS XML elements (body)

#### <body>

Introduction

In science and engineering, single-authored papers are rare, and co-authored papers are common. Joint research with coauthorship is in general superior in terms of scope and quality compared to individual research and single-authored papers, and thus, has the advantage of leading to results with greater influence. Additionally, by going through the process of discussion with other authors, research process can be better monitored and results can be better analyzed. Since distortions in results analysis and presentation can also be better excluded through this process, co-authorship is a desirable study method in the sense that it helps guarantee research integrity. Meanwhile, a student under the guidance of a professor should be recognized as a co-author in a paper if the student collected research materials and data that were used in the write-up of the paper. In many cases, though, professors complete the final version of a paper by improving the logic of what the student writes as a first draft. The process of producing the final version requires the professor to play the role of exploring and including novel research ideas, which is not an easy task. Through all these processes, the supervising professor and the student become not only partners but co-owners, or in other words, co-authors of the article. The responsibility for the content of the paper rests upon both co-authors as

#### science editing

highest-ranked journals by Korean Citation Index (KCI) im pact factor (IF) (search criteria: IF, impact factor; 'as of 2012', 'five-year period') and 20 lower-ranked journals, drawn from the humanities and social sciences journals indexed in the KCI (Suppl. 1). The lower-ranked journals were chosen based on having similar fields and similar numbers of published articles to the selected high-ranked IF journals; therefore, they do not comprise the 20 journals with the absolute lowest IIs. Following the classification of the KCI, these journals were categorized into 13 research areas and were analyzed accordingly: accounting, social welfare, economics/business administration, sociology/social sciences, administrative science, political science and diplomacy, education, law, policy science, regional development, history, linguistics, and Korean and Korean literature. In this study, research areas in which surveys and experimental approaches are commonly used were included. The fields of the humanities-in particular, literature, history, and philosophy-were scarcely included. For this study, 10,930 articles from 56 journals during the 2 phases-2004 to 2006 (phase 1, 3-year period) and 2011 to 2013 (phase 2, 3-year period)-were chosen. Among those articles, there were 4,820 co-authored articles, and the articles were divided into professor-student co-authorship and other types of co-authorship. Moreover, articles were classified by the institutional affiliation of the authors. Articles with corresponding

<body> <sec sec-type="intro"> <title>Introduction</title> In science and engineering, singleauthored papers are rare, and co-authored papers are common.

# </sec> </sec sec-type="materials|methods"> ... </sec>

```
<sec sec-type="results">
```

</sec>

<sec sec-type="discussion"> <title>Discussion</title>

professor-student co-authorship is finding its place in the humanities and social sciences in Korea. </sec> </body>

## JATS XML elements (back)

#### <back>

Professor-student co-authored papers

the increasing proportion of professor-student co-authorship in scholarship, and indicate that there is a major gap between research practices in academia and this judgment. Based on the results of this study, the Korean academy should continue to encourage collaborative research between professors and students in all fields, including the fields of literature, history, and philosophy.

In conclusion, these results show that in the humanities and social sciences in Korea, the ratio of professor-student caauthorship has increased in almost all fields. Additionally,we can see that the academic practice of students is recognized as collaborative research rather than merely a training process, and that professor-student co-authorship is finding is place in the humanities and social sciences in Korea.

### <fn-group>

#### <sec sectype="supplementarymaterial">

tors of the journals studied

#### <ref-list>

 ence. Paper presented at: the first conference of the Korean Society for Information Management; 1994 Dec; Seoul, Korea. p. 47-50.
 Judicial Precedent of Seoul Administrative Court. 2004 September. 2003Guhap6498.

<sec sec-type="supplementary-material">
<title>Supplementary Material</title>
<bold>Suppl. 1.</bold> Categories and
Korean Citation Index impact factors of the
journals studied
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content-type="local-data">
<media xlink:href="se-4-1-12-supple.xlsx"
mimetype="application"/></supplementarymaterial></sec>

3. Jang H, Kim K, Huh S, Kim H. Increasing number of authors per paper in Korean science and technology papers. Sci Ed 2016;3:80-9.

#### <ref id="b3-se-4-1-18"> <Iabel>3</Iabel>

<source>Sci Ed</source> <year>2016</year> <volume>3</volume> <fpage>80</fpage> <lpage>9</lpage>

</element-citation></ref>

## Unicode

=>

기호	값	기호	값
&	&	ð	∂
<	<	Е	∃
>	>	$\nabla$	∇
¢	¢	$\checkmark$	√
£	£	≒.	≒
¥	¥	¥	≠
§	§	$\leq$	≤
©	©	$\geq$	≥
R	®	$\geq$	≥
±	±	α	α
×	×	β	β
Σ	Σ	χ	χ
€	€	δ	δ

### http://unicode-table.com/en/



### **HTML** Entities

### http://www.w3schools.com/html/html\_e ntities.asp

- Replace with the entity codes about &,  ${\boldsymbol{<}},{\boldsymbol{>}}$  so on in ASCII codes.

- Without some unicodes in ASCII, Convert it to anci and ascii type to see the character

## 4. Applications of XML

- 1) MathML
- 2) ChemML

## What is MathML

### MathML(Mathematical Markup Language)?

✓ Mathematical Markup Language (MathML) is a mathematical markup language, an application of XML for describing mathematical notations and capturing both its structure and content.

 $\checkmark$  It aims at integrating mathematical formulae into World Wide Web pages and other documents.

- ✓ W3C Recommendation and part of HTML5
- ✓ MathML is available to add the XML file as xml.

### Presentation MathML vs Content MathML

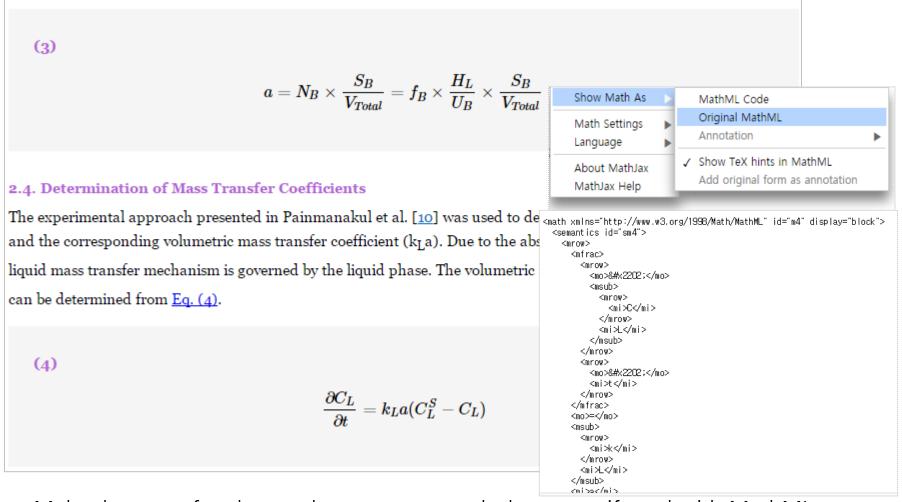
### Presentation MathML

- ✓ MathML focus on display of math
- ✓ There are more than 30 elements
- ✓ Elements's name begins "m".

### Content MathML

 $\checkmark$  Focus on contents rather than display of math

## Mark of MathML for example



\* Make the use of a data and resource to web document if used with MathML

## MathML Elements

Elements	Rendering	MathML Source Code
mo	Operator -+ =	<mo></mo> <mo>+</mo> <mo>=</mo>
mi	identifier A	<mi>A</mi>
mn	number 3	<mn>3</mn>
mtext	text KCSE	<mtext>KCSE</mtext>
mfrac	A B	<mfrac><mn>A</mn><mn>B</mn></mfrac>
msqrt	$\sqrt{A}$	<msqrt><mi>A</mi></msqrt>
mroot	A√B	<mroot><mi>B</mi>A</mroot>
msup	$A^{B}$	<msup><mi>A</mi><mi>B</mi></msup>
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mtable	행렬 표현 <mark>(01)</mark> 01)	<mfenced><mtable><mtr><mtd><mn>0</mn></mtd><mtd><mn>1</mn></mtd></mtr><mtd><mn>0</mn></mtd><mtd><mn>1</mn></mtd><mtd><mtd><mn>1</mn></mtd></mtd></mtable></mfenced>

## **ChemML Elements**

### ChemML /CML(Chemical Markup Language)

### Building blocks of chemistry

- ✓ atoms
- ✓ ions
- ✓ molecules

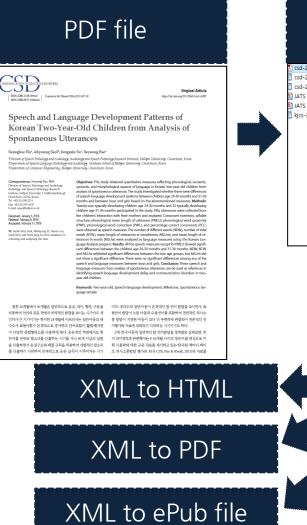
	ChemML
Η	<chem> <atom>H</atom> </chem>
H <sub>2</sub> O	<chem><molecule> <atom n="2">H</atom> <atom>O</atom> </molecule></chem>
2H <sub>2</sub> O	<chem><molecule n="2"> <atom n="2">H</atom> <atom>O</atom> </molecule></chem>

## JATS XML to conversion

### 5. JATS XML to conversion

- 1) JATS XML to HTML (website)
- 2) JATS XML to PubReader (HTML5, Using the open source )
- 3) JATS XML to PDF
- 4) JATS XML to ePub (ebook 3.0)

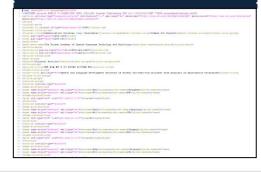
## Workflow MS-word to JATS XML



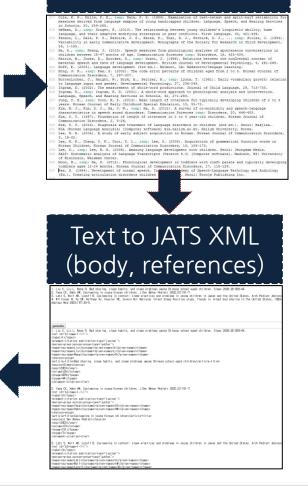
#### Conversion to **MS-word** csd-21-1-47.pdf Acrobat 9로 열기 csd-21-1-파일 97KB csd-21-1-인쇄(P) 파일 83KB soft PowerP. JATS XML 🐁 Acrobat에서 지원되는 파일 결합.. IATS XML soft PowerP. 6.903KB kjcs-36-1- 🥜 알약으로 검사하기(V) 파일 86KB 알집으로 압축하기(L) 👩 관리자 권한으로 압축하기(Y) ☑ "csd-21-1-47.zip" 으로 압축하기(Q) Edit with Notepad++ 🐜 네이트 메일로 파일 전송 EditPlus 3 Windows Defender(으)로 검사... ABBYY FineReader 11 ➢ Microsoft Word 문서로 변환 孩 Microsoft Excel 문서로 변환 ♥ 네이버 백신으로 바이러스 검사하기(G)... 👃 검색 가능한 Adobe PDF로 변화 연결 프로그램(H) ...................... ABBYY FineReader 11에서 열기 🖌 V3 정밀 검사

#### **ABBYY FineReader**

### JATS XML Validation



### Extraction to Text



## Workflow-table

#### (Table) – Original PDF

		Non-mix-OSA		Mix-OSA		A difficulty in sortin		
	Supine	Non-supine	p value Sup	ine Non-supine	p value	the sell without style		
OAI (/h)	21.0±20.3	5.7±11.9	<0.001 30.4±	15.5 15.6±18.3	<0.001			
MCAI (/h)	1.9±3.1	0.6±2.3	<0.001 21.9±	15.4 6.4±8.8	< 0.001			
HI (/h)	22.8±17.1	10.9±12.2	<0.001 13.1±	12.0 15.4±20.7	(Table) – JATS >	KML		
		mixed breaking pattern, N			<pre>ktable rules="group (charles)</pre>	ps" frame="hsides">		
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					<td align="left" valign="top&lt;/td&gt;&lt;td&gt;p"></td>			
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OAI (/h)↩	21.0±20.3₽	5.7±11.9₽	< 0.001	30.4±15.5		p" align="left">Supine		
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			•			p" align="left">Non-supine		
HI (/h)₽	22.8±17.1₽	10. 212.2	◆ <0.001+2	13.1±12.0		p" align="left">p value		
		•				p" align="left">OAI (/h)		
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(Table) = Ext	ract to Excel					<pre>p" align="left"&gt;5.7±11.9 p" align="left"&gt;&lt;0.001 </pre>		
		Non-mix-OSA				p" align="left">30.4±15.5		
	Supine	Non-supine	p value	Supine		p" align="left">15.6±18.3		
			•	-		p" align="left"><0.001		
DAI (/h)	21.0±20.3	5.7±11.9	< 0.001	30.4±15.5				
/CAI (/h)	1.9±3.1	0.6±2.3	< 0.001	21.9±15.4		<pre>p" align="left"&gt;MCAI (/h) p" align="left"&gt;1.9±3.1 </pre>		
						p" align="left">0.6±2.3		
HI (/h)	22.8±17.1	10.9±12.2	< 0.001	13.1±12.0	<td align="left" valign="to:&lt;/td&gt;&lt;td&gt;p">&lt;:0.001</td>	<:0.001		

## Table Workflow - Excel to XHTML

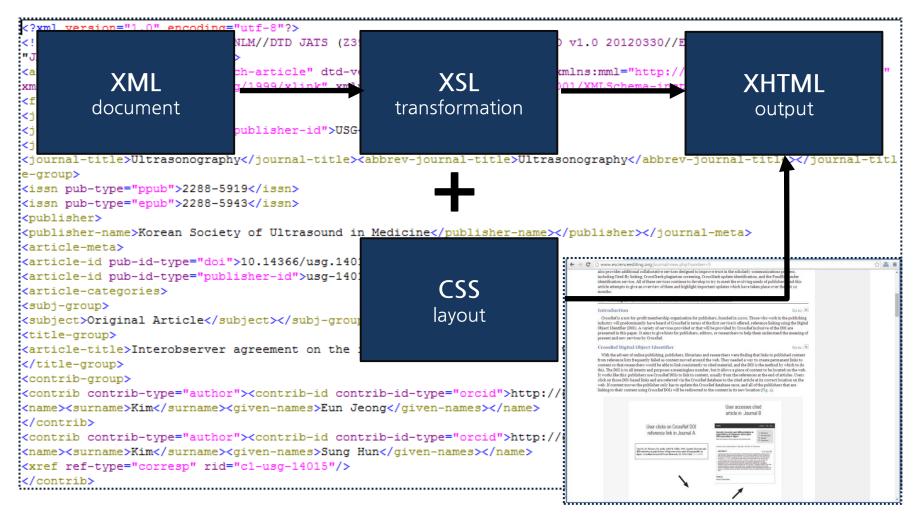
A ao aroup	Types of sylla-	Inventory of consonant			
Age group	ble structure	Initial	Final	Total	
24-30 mo					
Boy	6.20 (1.03)	11.90 (3.11)	3.00 (1.41)	13.10 (3.07)	
Girl	6.09 (.94)	10.27 (3.35)	3.27 (1.49)	11.27 (3.20)	
Total	6.14 (.94)	11.05 (3.26)	3.14 (1.42)	12.14 (3.20)	
1-36 mo					
Boy	6.57 (.98)	12.86 (1.68)	4.29 (.76)	13.86 (1.35)	
Girl	7.07 (.68)	13.94 (2.08)	4.88 (.89)	15.00 (1.97)	
Total	6.91 (.79)	13.61 (1.99)	4.79 (.88)	14.65 (1.85)	
otal					
Boy	6.35 (.10)	12.29 (2.59)	3.53 (1.33)	13.41 (2.48)	
Girl	6.67 (.92)	12.44 (3.19)	4.22 (1.40)	13.48 (3.11)	
Total	6.55 (.95)	12.39 (2.94)	3.95 (1.40)	13.45 (2.85)	

- 1) Extract table from PDF file
- 2) After copying extracted table, paste it on the excel
- 3) Excel to XHTML automatically
- 4) Check the indentation, range, italic, bold so on.
- 5) Add it to JATS XML file

ttable rules="groups" frame="hsides"> <d align="left" rowspan="2" valign="middle">Age</d>	Expert(=)			Inventory of consonant		
<pre>to valign="middle" align="tert fowspan="2"&gt;to valign="middle" align="tert fowspan="2"&gt;to valign="tert fowspan="2"&gt;tert fowspan="2"&gt;tert fowspan="2"&gt;tert fowspan="2"&gt;tert fowspan="2"&gt;tert fowspan="tert fowspan="2"</pre>		Age group	Types of syllable structure	Initial	Final	Total
<to 2="" argine="" center="" fowspane="" minute="" stypes<br="" varigine="">if syllable structure</to> <to <="" aligne="center" td="" valigne="middle"><td>top(1)</td><td>24-30 mo</td><td></td><td></td><td></td><td></td></to>	top(1)	24-30 mo				
<pre></pre>	middle(2)	Воу	6.20 (1.03)	11.90 (3.11)	3.00 (1.41)	13.10 (3.07)
	bottom(3)	Girl	6.09 (.94)	10.27 (3.35)	3.27 (1.49)	11.27 (3.20)
Final	left(4)	Total	6.14 (.94)	11.05 (3.26)	3.14 (1.42)	12.14 (3.20)
valign="top" align="left">24-30 mo   valign="top" align="left">    valign="top" align="left">    valign="top" align="left">	center(5)	31-36 mo				
		Воу	6.57 (.98)	12.86 (1.68)	4.29 (.76)	13.86 (1.35)
	right(6)	Girl	7.07 (.68)	13.94 (2.08)	4.88 (.89)	15.00 (1.97)
	indent(7)	Total	6.91 (.79)	13.61 (1.99)	4.79 (.88)	14.65 (1.85)
Boy 6.20 (1.03)		Total				
11.90 (3.11) 3.00 (1.41)	cancel(-)	Воу	6.35 (.10)	12.29 (2.59)	3.53 (1.33)	13.41 (2.48)
13.10 (3.07)	italic(8)	Girl	6.67 (.92)	12.44 (3.19)	4.22 (1.40)	13.48 (3.11)
Girl	italic(0)	Total	6.55 (.95)	12.39 (2.94)	3.95 (1.40)	13.45 (2.85)

## JATS XML to HTML

### The following shows the relationship between XSL and CSS files



## JATS XML to PubReader

### **Touch Computing**

- The end interface of mouse => Touch computing
- Sliding/multi-touch/Gesture/UX(User Experience)

### Change of Service

- Generalization of various digital device, e.g. Smart phone and tablet
- Competition of OS, e.g. ios and android
- Extinguish of resolution

### Application strategy of HTML5

- Using the OSMU(One Source Multi Device)-Cutting production cost of the contents
- Accept OS / Screen Size & Screen Resolution / Multi Device
- Service contents multi-media streaming based on multi-media

## JATS XML to PubReader - Smart device



- XML to PubReader
- Access from whatever device you are using
- Use XSLT to convert it into an HTML5- Enabled for sliding and touch

### JATS XML to PubReader - browser

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자발화 분석을 통한 만 2세 한국아동의 말-언어발달 특성

자발화 분석...

Commun Sci D

Speech and Language of Korean Two-Year-Old Analysis of Spontaneou

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Page 10 of 20

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#### Article information

Commun Sci Disord Vol. 21, No. 1, 47 Publication date (electronic) : March 3 doi : http://dx.doi.org/10.12963/csd.16

Seunghee Ha<sup>a</sup>, Ahyoung Seol<sup>b</sup>, Jung

Page 1 of 66

Age group Types of syllable structure		Invent	ory of con	f consonant	
Age group	Types of syllable structure	Initial	Final	Total	
24-30 то					
Boy	6.20 (1.03)	11.90 (3.11)	3.00 (1.41)	13.10 (3.0	
Girl	6.09 (.94)	10.27 (3.35)	3.27 (1.49)	11.27 (3.20	
Total	6.14 (.94)	11.05 (3.26)	3.14 (1.42)	12.14 (3.20	
31-36 mo					
Boy	6.57 (.98)	12.86 (1.68)	4.29 (.76)	13.86 (1.3	
Girl	7.07 (.68)	13.94 (2.08)	4.88 (.89)	15.00 (1.97	
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Total					
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Girl	6.67 (.92)	12.44 (3.19)	4.22 (1.40)	13.48 (3.1	
Total	6.55 (.95)	12.39 (2.94)	3.95 (1.40)	13.45 (2.85	

자발화 분석을 통한 만 2세 한국아동의 말-언어발달 특성 Commun Sci Disord Vol. 21, No. 1, 47-59, March, 2016

> 음목록 전체로 보았을 때 2세 전반에는 평균 12.14개, 2세 후반에는 평균 14.65개로 령이 증가함에 따라 산출되는 자음의 수가 많았고 남아와 여아 모두 평균 13.45개 정 로 유사하였다(Table 2). 자음목록에 대한 이원분산분석 결과, 초성 자음 유형은 월령 따라 유의한 차이를 보였으나(F=7.677, p<.01), 성별(F=.107, p>05)과 상호작용효과 -=2.635, p>.05)는 유의하지 않았다. 종성 자음 유형은 월령에 따라 유의한 차이를 보 고(F=15.208, p<.001), 성별(F=1.355, p>.05)과 상호작용효과(F=.183, p>.05)는 유 하지 않았다. 전체 자음 목록 수에서도 마찬가지로 월령에 따라서만 유의한 차이를 =였다(F=7.931, p<.01).

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세 전반과 후반 아동의 50% 이상 자음목록에 포함된 음소들은 Table 3에 제시하였다. 음목록 중 초성은 2세 전반에는 평균 11.05개로 2세 전반 아동의 50% 이상 초성 자음 록에 포함된 음소로는 조음 방법 면에서 파열음 /ㅍ/, 마찰음 /ㅆ/를 제외한 모든 초 산출하였고, 2세 후반에는 평균 13.16개로 파열음, 마찰음, 파찰음, 비음, 유음 모든 초성 자음을 산출하여 월령이 증가함에 따라 산출되는 초성 자음의 수가 증가 였다. 성별에 따라서는 남아 평균 12.29개로 파열음 / ㅍ/, 마찰음 /ᄊ/를 제외한 모든 성 자음을 산출하였고, 여아는 평균 12.44개로 마찰음 /ㅆ/를 제외한 모든 초성 자음 산출하였다. 종성 자음목록 수는 2세 전반에는 평균 3.14개로 2세 전반 아동의 50% 상에게서 비음, 유음이 관찰되었고, 2세 후반에는 평균 4.79개로 종성파열음이 추가 는 모습이 관찰되었다

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### GitHub: https://github.com/ncbi/PubReader

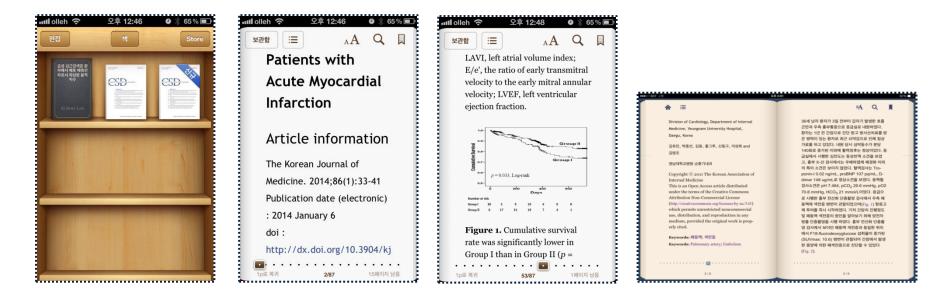
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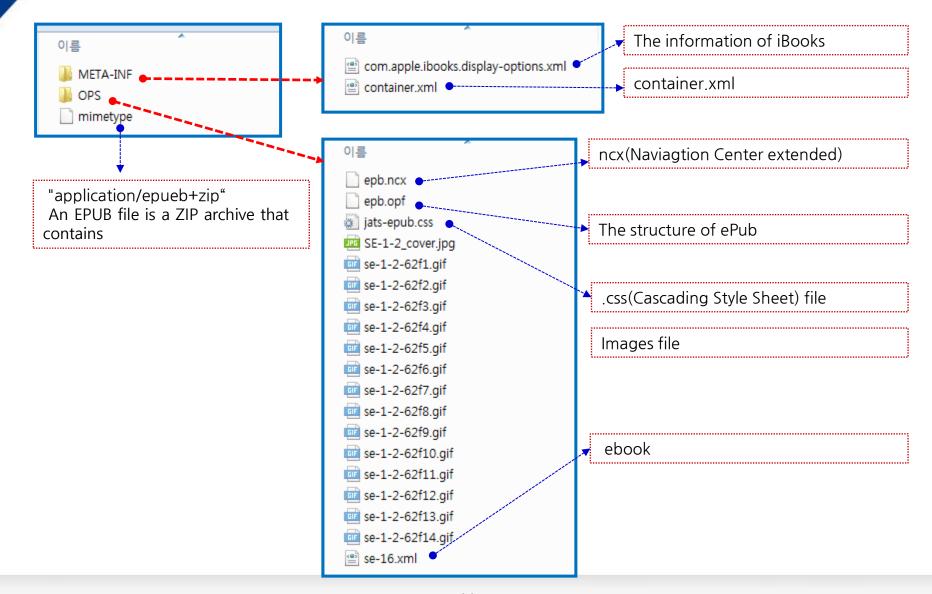
## JATS XML to ePub

### ePub (electronic publication)?

- A Standard of open type electronic book established from IDPF(International Digital Publishing Forum)
  - ✓ JATS XML is easy to be reused and converted into variable format such as ePub (eBook)
  - $\checkmark$  Automatic optimization to size of devices as converted into ePub



## ePub -ePub 3.0 -Component



### JATS XML to PDF

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#### Article

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#### Direct Interaction between Ras Homolog Enriched in Brain and FK506 Binding Protein 38 in Cashmere Goat Fetal Fibroblast Cells

Xiaojing Wang, Yanfeng Wang, Xu Zheng, Xiyan Hao, Yan Liang, Manlin Wu, Xiao Wang, Zhigang Wang

Received: February 26, 2014 Accepted: July 14, 2014 <sup>1</sup> Chifeng Municipal Hospital, Chifeng, Inner Mongolia 024000, China.

Corresponding Authors: Zhigang Wang, E-mail: 1awzg@imu.edu.cn / Xiao Wang, E-mail: wx1ao2008@gmail.com College of Life Sciences, Inner Mongolia University, Hohhot 010021, China

#### Abstract

Ras homolog enriched in brain (Rheb) and FK506 binding protein 38 (FKBP38) are two important regulatory proteins in the mammalian target of rapamycin (mTOR) pathway. There are contradictory data on the interaction between Rheb and FKBP38 in human cells, but this association has not been examined in cashmere goat cells. To investigate the interaction between Rheb and FKBP38, we overexpressed goat Rheb and FKBP38 in goat fetal fibroblasts, extracted whole proteins, and performed

communoprecipitation to detect them by western blot. We found Rheb binds directly to FKBP38. Then, we constructed bait vectors BKT7-Rheb/FKBP38) and prey vectors (pGADT7-Rheb/FKBP38), and examined their interaction by yeast two-hybrid assay. Their direct interaction was observed, regardless of which plasmid served as the prey or bait vector. These results indicate that the 2 proteins interact directly in vivo. Novel evidence is presented on the mTOR signal pathway in Cashmere goat cells.

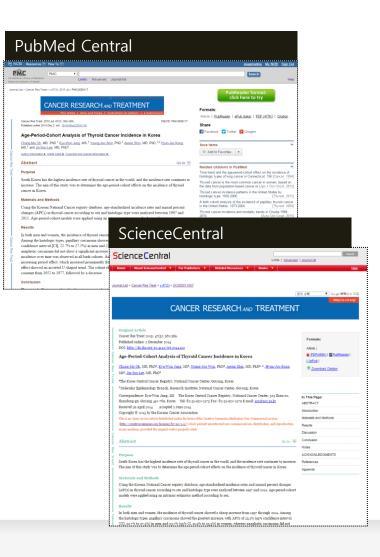
Keyword: FK506 Binding Protein 38 (FKBP381, Interaction, mammalian Target of Rapamycin (mTOR), Ras homolog enriched in brain [Rheb] .....



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## JATS XML-based full text database

### PubMed Central, ScienceCentral



### JATS XML to Conversion

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