

Digital Commons

IMSA's Institutional Portfolio

How inclusion is creating a win-win for stakeholders

Jean Bigger

Illinois Mathematics and Science Academy

Riding the Wave

Digital Commons North American Conference 2021

October 26th-28th



Thank you!

Thank you!

- For organizing conferences and sharing your knowledge through presentations
- For the ongoing community dialogue at: digitalcommons@googlegroups.com

Digital Commons Great Lakes User Group

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Digital Commons Great Lakes User Group Annual Meeting [Follow](#)

The 2015 DCGLUG event will be hosted by Wayne State University. Date and location information will be posted in early 2015.

Welcome to the first annual Digital Commons Great Lakes User Group (DCGLUG) meeting. This event will be held on August 3, 2012 on the downtown Grand Rapids, Michigan campus of Grand Valley State University. This meeting was made possible by the generous sponsorship of bepress. Our goals are to create community among regional Digital Commons users and to provide an opportunity to share ideas, best practices, and strategies for success. We look forward to seeing you there.

Browse the contents of Digital Commons Great Lakes User Group Annual Meeting:
[DCGLUG 2012](#)

Thank you!

For sharing your Best Practices:

- Documentation: LibGuide Users Guide
- DigitalCommons Advisory Group

Library / LibGuides / DigitalCommons@IMSA / Welcome!

DigitalCommons@IMSA

A guide to DigitalCommons@IMSA and the IMSA Faculty & Staff Expert Gallery

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- Student Portfolios
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- Open Access
- Scholarship at IMSA

Management of DigitalCommons

DigitalCommons is managed by IMSA's library. The Collection Policy and various procedures are reviewed and modified by the DigitalCommons Advisory Group, as needed:


FY21 DC Advisory Group:

- Jean Bigger; Technical Services Supervisor / DigitalCommons Manager
- Angie Richardson; Supervisor, Information Resource Center
- Sowmya Anjur, PhD; Faculty, Science-Biology / Student Inquiry and Research Program Coordinator
- Adrienne Coleman, EdD; Director of Equity and Inclusion
- Hannah Anderson, PhD; Institutional Research Associate
- Katelyn Lancaster; Senior Communications Specialist
- Elizabeth Martinez; Curriculum and Professional Development Specialist
- Bill McGrail; Producer / Media Director

Collection Policy

DigitalCommons@IMSA showcases the intellectual and creative output of the Illinois Mathematics and Science Academy. The [DigitalCommons Collection Policy](#) provides guidance about the scope and criteria for submissions.

What is DigitalCommons@IMSA?



Welcome to **DigitalCommons@IMSA!**

DigitalCommons@IMSA reflects the scholarly, innovative, and pedagogical culture of the Illinois Mathematics and Science Academy. The goal of this online repository is to share the intellectual output of IMSA and to increase visibility and impact through worldwide access.

IMSA's institutional portfolio has been in development since 2010 and currently links to over 6,400 open-access articles, conference proceedings, teacher resources, image and audio files, as well as provides references to books and other creative works not fully accessible online.

DigitalCommons@IMSA furthers IMSA's mission, "to ignite and nurture creative, ethical scientific minds that advance the human condition, through a system distinguished by profound questions, collaborative relationships, personalized experiential learning, global networking, generative use of technology and pioneering outreach."


Goals of DigitalCommons@IMSA:

- Disseminate and promote academic, innovative, and creative achievements of the faculty, staff, and students of the Illinois Mathematics and Science Academy
- Ensure preservation of and persistent access to said work
- Provide a publishing platform for open access content from the Illinois Mathematics and Science Academy
- Document and record IMSA's history and progress
- Foster scholarly collaboration between colleagues

Readership Map

Reader from: Calumet City, Illinois, United States

Commencement of the Class of 2004
Illinois Mathematics and Science Academy
Ceremony



Recent Downloads
15 of 445
in the past day



Thank you to my co-conspirator, Kelly Kunaniec - and the rest of the consulting team who come to my rescue on a regular basis.

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Mathematics and Computer Science

Parents Association Council

Fine Arts

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Wellness

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Thank you!

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Thanks a lot JG!

We actually have a lot more in common than just a rather strange preoccupation with
Authority Control and the **3-Tier Taxonomy of Disciplines** ...
the importance of which does not need to be explained to this group

A little about me...



Jean Bigger

Head of Technical Services | DigitalCommons Manager |
Archives Liaison

I've been at IMSA for over 30 years – since the first IMSA
class graduated

A little about IMSA:

The Illinois Mathematics and Science Academy (IMSA), is a state-funded residential high school for gifted students in Illinois.

The school opened in 1986 with the first sophomore class of approximately 200 students • it's located in Chicago's far west suburb of Aurora • and it has a current annual student body of about 650 sophomores, juniors, and seniors

Admission is open to students from across Illinois; however, the process is extremely competitive. Students who present the strongest combination of credentials are invited to attend.

IMSA Founders:



Leon Lederman, PhD

Nobel Laureate and Director of Fermilab, particle physics and accelerator laboratory

Former Illinois Governor James R. Thompson

Passed the Education Reform Act of 1985 that created the
Illinois Mathematics and Science Academy

Stephanie Pace Marshall, PhD

Founding President of IMSA and Founding President of the Nationally Consortium
for Specialized Secondary Schools in Mathematics, Science and Technology (NCSSSS)

A little about DigitalCommons

Strategy 4: We will generate scholarship that discovers, integrates, applies and transfers knowledge produced by our work

- Went live on 11.4.2010 with 16 published articles by faculty/staff
 - Has grown to over 7,896 Works
- Includes: published articles, conference presentations, open educational resources, a digital archives, and student work
 - Current Dashboard Statistics:
720,849 full text downloads / 2,363 Streams / 193,561 Metadata Page Hits
16,481 Institutions – top downloads by Education
51 Countries – top downloads in Illinois

Includes some of our best work by:

- All of the academic teams
 - All of the academy centers / programs
 - Almost all of the academy departments
 - Every student beginning sophomore year

DigitalCommons connects IMSA with a global community of scholars.

Furthers IMSA's Mission:

" To ignite and nurture creative, ethical, scientific minds that advance the human condition"

And supports its Legislative Charge:

<https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1030&ChapterID=17>

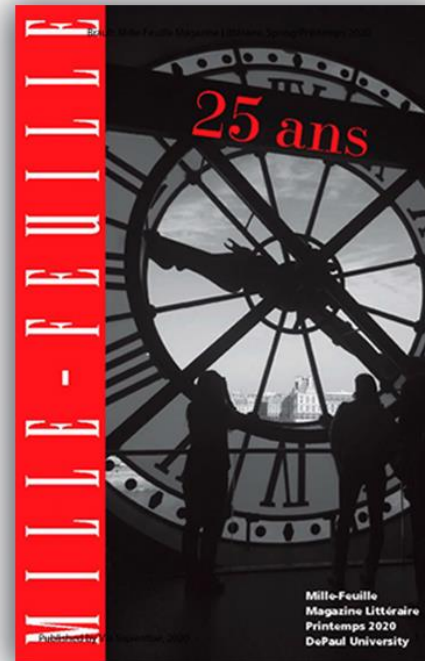
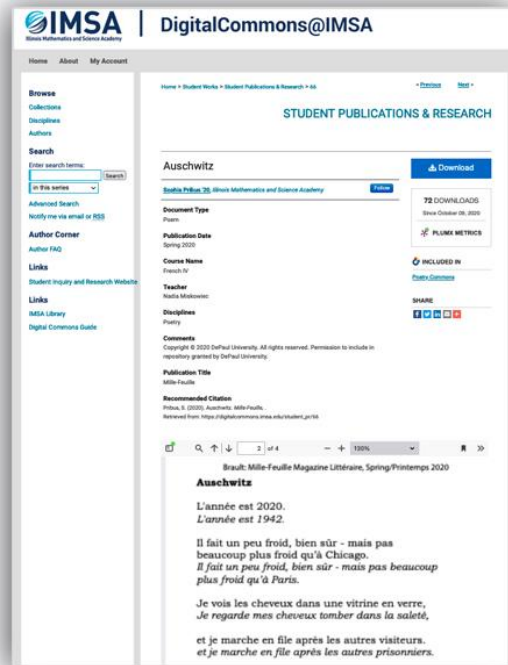
So what do we have in common?

Besides a passion for our communities
combined
with a rather curious willingness to go looking for more work ...

Our students have mentors at your institutions and together they are publishing and presenting:

- Washington State University: https://digitalcommons.imsa.edu/student_pr/77/
- Mississippi State University: https://digitalcommons.imsa.edu/student_pr/45/
- Mississippi State University: https://digitalcommons.imsa.edu/student_pr/43/
- Illinois State University: https://digitalcommons.imsa.edu/student_pr/30/
- Loyola University: https://digitalcommons.imsa.edu/student_pr/15/

Our students are publishing in your journals:



Our faculty and staff have a masters thesis or dissertation from your institution:

Georgia State University

ScholarWorks @ Georgia State University

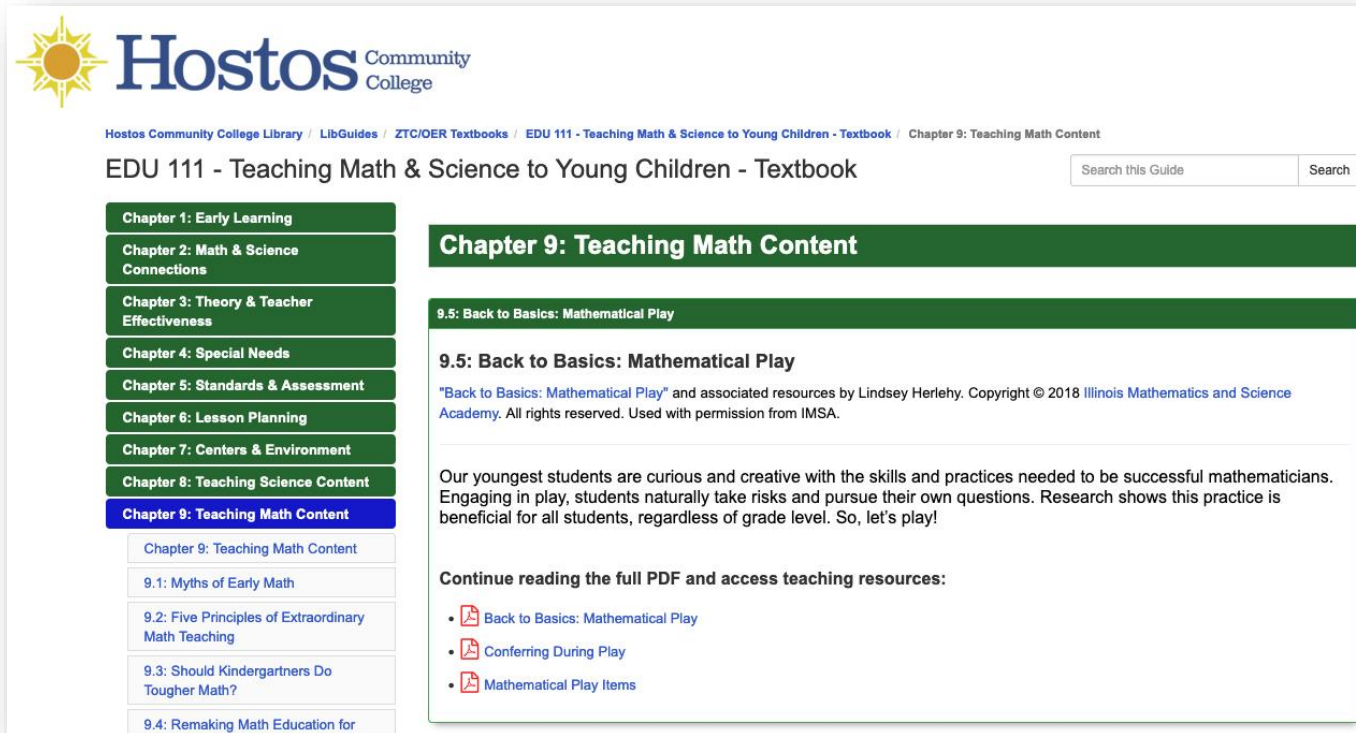
Middle and Secondary Education Dissertations Department of Middle and Secondary Education


Spring 5-13-2016

A case study exploring the effects of using an integrative STEM curriculum on eighth grade students' performance and engagement in the mathematics classroom

Norman Robinson

Their teacher resources are being published in your open access textbooks:



 **Hostos** Community College

Hostos Community College Library / LibGuides / ZTC/OER Textbooks / EDU 111 - Teaching Math & Science to Young Children - Textbook / Chapter 9: Teaching Math Content

EDU 111 - Teaching Math & Science to Young Children - Textbook

- Chapter 1: Early Learning
- Chapter 2: Math & Science Connections
- Chapter 3: Theory & Teacher Effectiveness
- Chapter 4: Special Needs
- Chapter 5: Standards & Assessment
- Chapter 6: Lesson Planning
- Chapter 7: Centers & Environment
- Chapter 8: Teaching Science Content
- Chapter 9: Teaching Math Content**

Chapter 9: Teaching Math Content




9.5: Back to Basics: Mathematical Play

9.5: Back to Basics: Mathematical Play

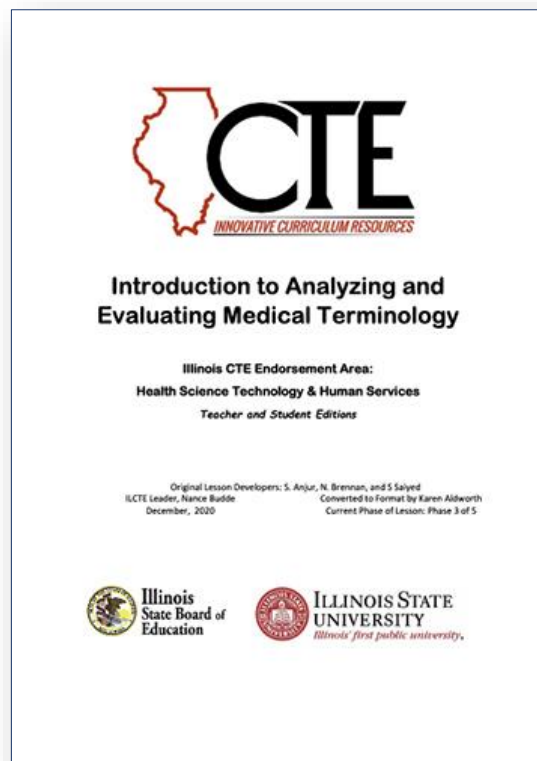
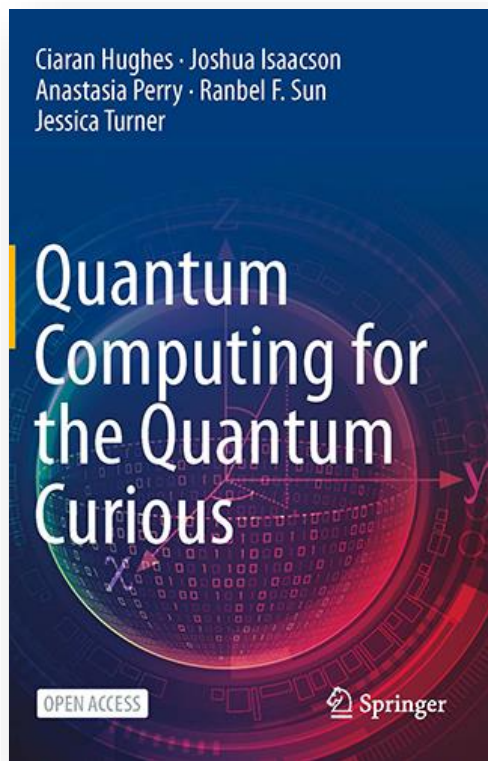
"Back to Basics: Mathematical Play" and associated resources by Lindsey Herlehy. Copyright © 2018 Illinois Mathematics and Science Academy. All rights reserved. Used with permission from IMSA.

Our youngest students are curious and creative with the skills and practices needed to be successful mathematicians. Engaging in play, students naturally take risks and pursue their own questions. Research shows this practice is beneficial for all students, regardless of grade level. So, let's play!

Continue reading the full PDF and access teaching resources:

-  [Back to Basics: Mathematical Play](#)
-  [Conferring During Play](#)
-  [Mathematical Play Items](#)

Our faculty are publishing open access textbooks:



**Our students are attending your colleges
and universities, interning at your
institutions, and applying for jobs at
your companies.**

AND

**They're coming with an understanding
of the importance and benefit of being
connected to a global community of scholars.**

Accountability:

a need to show a return on investment to our stakeholders

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: [\(105 ILCS 305/\) Illinois Mathematics and Science Academy Law](#)

The primary role of the Academy shall be to offer a uniquely challenging education for students talented in the areas of mathematics and science. Both high school and college levels of instruction will be provided in order to assure appropriate linkage with higher education. Other programs deemed necessary to assure the elements of a strong general education required of creative scientists will be provided.

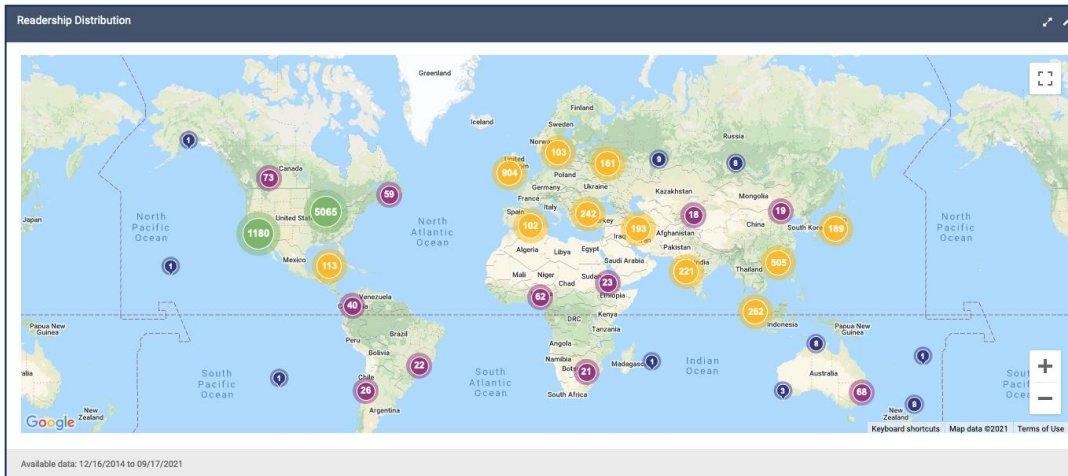
Primary Source Evidence of ROI: *all student work included in DC is approved by faculty/staff*

- **Student Publications & Research** - published articles and conference papers/presentations
- **Independent Study** - year-long research, approved by administration - final report approved by faculty
- **Distinguished Student Work** - external competitions: math, science, arts, humanities
- **Exemplary Student Work** - project work that exceeds expectations - approved by faculty or staff advisor

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: ([105 ILCS 305/](#)) [Illinois Mathematics and Science Academy Law](#)

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Student Publications & Research:

12,183 Full text downloads

873 Institutions

- Northwestern University
- University of Illinois
- University of Illinois, Chicago
- Stanford University
- Argonne National Laboratory
- Yale University
- University of Chicago
- Boston University
- University of Southern California

We can see an indication of student growth in critical thinking and written communication skills.

Urbanization in India: An Obituary

NOT IF WE CAN HELP IT!
By Niharika and Pratik

India is urbanizing very rapidly due to the movement of people from rural areas towards cities for better opportunities. India does not have the resources to bear the rapid urbanization of the population rapidly. This urbanization has caused several environmental problems with air and water pollution.

Air Pollution

Non-ferrous metal production and use, and steel production are the main contributors to air pollution in India. The main pollutants are particulate matter (PM), carbon monoxide (CO), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂).

Water Pollution

Water pollution in India is caused by untreated effluents from industries, agriculture, and domestic sewage. The main pollutants are heavy metals, pesticides, and organic matter.

Past Solutions

- Ganga Action Plan:** This project aimed to clean up the Ganga River and improve water quality by installing sewage treatment plants and controlling pollution.
- Court Orders:** From the Supreme Court of India, various orders have been issued to protect the environment and improve water quality.

Our Solutions

- Greener Transportation:** Promoting the use of public transport, bicycles, and electric vehicles to reduce air pollution.
- Education:** Raising awareness about environmental issues and promoting sustainable living practices.

INSOMNIA

SHRUTI SHARMA, AND SAMRAT CHAKRABARTY

Insomnia is difficulty falling asleep or staying asleep, even when a person has the chance to do so. People with insomnia can feel dissatisfied with their sleep and usually experience one or more of the following symptoms: fatigue, low energy, difficulty concentrating, mood disturbances, and decreased performance in work or at school.

FIG 1. (ABOVE) THE MAP REPRESENTS THE PERCENTAGE OF THE POPULATION AROUND THE WORLD THAT SUFFER FROM CHRONIC INSOMNIA.

FIG 2. (ABOVE) THE PREVALENCE OF INSOMNIA INCREASES AS AGE INCREASES.

FIG 3. WOMEN ARE 2X AS LIKELY TO SUFFER FROM INSOMNIA THAN MEN.

SYMPTOMS:

Difficulty falling asleep, waking up during the night/waking up too early, tiredness, irritability, depression, or anxiety, difficulty concentrating, increased errors or accidents, or ongoing worries about sleep.

FIG 1. LIGHT ENTERS THE EYE AND IS CAPTURED BY THE RETINA AND FORMS AN ELECTRONEUROLOGICAL SIGNAL. THIS SIGNAL TRAVELS SEVERAL FEET AND STOPS AT DIFFERENT SENSORS: THE FIRST BEING THE SKIN AND THE SECOND BEING THE EYE. THE SKIN IS THE BODY'S CLOCK THAT REGULATES CLOCKWISE DIRECTION (SLEEP CHOLEL).

FIG 2. THE HYPOTHALAMUS, PINEAL GLAND, ADRENAL GLANDS, THE HPA AXIS IS THE CENTRAL STRESS RESPONSE SYSTEM. THE PINEAL GLAND DEPENDS THE NEGATIVE FEEDBACK LOOP BY CONTROLLING CORTISOL.

FIG 3. ELABORATE DESCRIPTION OF HOW MELANIN, LIGHT (NIGHTTIME) INDUCES MELANIN PRODUCTION BY THE PINEAL GLAND. THIS IS A SCHEMATIC REPRESENTATION OF THE MELANIN SECRETION AND SIGNALING MECHANISM TO MAINTAINING CIRCADIAN RHYTHM WITHIN THE CELL. THIS SHOWS MELANIN RECEPTORS 1 AND 2, GUANINE NUCLEOTIDE BINDING PROTEIN, BINDING PROTEIN, ADENYLATE CYCLASE, INHIBITORY G.

FIG 4. MELANIN INFLUENCES THE HPA AXIS BY INHIBITING THE ACTH AND CORTISOL RELEASE FROM THE ADRENAL GLAND.

FIG 5. ELABORATE DESCRIPTION OF HOW MELANIN, LIGHT (NIGHTTIME) INDUCES MELANIN PRODUCTION BY THE PINEAL GLAND. THIS IS A SCHEMATIC REPRESENTATION OF THE MELANIN SECRETION AND SIGNALING MECHANISM TO MAINTAINING CIRCADIAN RHYTHM WITHIN THE CELL. THIS SHOWS MELANIN RECEPTORS 1 AND 2, GUANINE NUCLEOTIDE BINDING PROTEIN, BINDING PROTEIN, ADENYLATE CYCLASE, INHIBITORY G.

FIG 6. MELANIN INFLUENCES THE HPA AXIS BY INHIBITING THE ACTH AND CORTISOL RELEASE FROM THE ADRENAL GLAND.

FIG 7. MELANIN INFLUENCES THE HPA AXIS BY INHIBITING THE ACTH AND CORTISOL RELEASE FROM THE ADRENAL GLAND.

FIG 8. MELANIN INFLUENCES THE HPA AXIS BY INHIBITING THE ACTH AND CORTISOL RELEASE FROM THE ADRENAL GLAND.

FIG 9. MELANIN INFLUENCES THE HPA AXIS BY INHIBITING THE ACTH AND CORTISOL RELEASE FROM THE ADRENAL GLAND.

RISK FACTORS

Medications, diet pills, steroids, gender, psychological factors (stress, insomnia is also a symptom of bipolar disorder, depression, etc), smoking, drinking, working out close to bedtimes, irregular schedules, long-range traveling (jetlag), poor sleep environment, etc.

TREATMENTS

Pharmaceuticals: An oral tablet that improves the quality of sleep by increasing the amount of melatonin in the body. This helps in the opening of chloride channels, causing hyperpolarization, inhibition of neuronal firing, and enhancement of the inhibitory effect of GABA. This eventually leads to a deeper sleep and allows for an undisturbed sleep.

Behavioral Therapy: This therapy aims to increase the activity of GABA, increasing the GABA activity helps you to sleep.

Phytotherapy: The natural source of melatonin, which is secreted by the pineal gland. It is secreted by the pineal gland.

Acupuncture: Acupuncture points include Yintang, Anmigran, and Dazhui. Acupuncture stimulates the HPA axis.

Behavioral Therapy: This therapy aims to increase the activity of GABA, increasing the GABA activity helps you to sleep.

Phytotherapy: The natural source of melatonin, which is secreted by the pineal gland. It is secreted by the pineal gland.

Acupuncture: Acupuncture points include Yintang, Anmigran, and Dazhui. Acupuncture stimulates the HPA axis.

REFERENCES

The Pathological Interaction Between Alzheimer's Disease and Osteoporosis in SxFAD Model

IMSA | Shree Shakti Singh, Dr. Ryan Romo PhD, RUSH UNIVERSITY

Abstract

Alzheimer's Disease (AD) and Osteoporosis are common degenerative diseases of aging. AD has been associated a risk for osteoporosis and previous studies have shown that patients with AD have an increased risk for fractures which can be the result of osteoporosis, suggesting a link between reduced bone mass and AD. This experiment aimed to investigate whether SxFAD mice model which recapitulates many Alzheimer's pathologies. The objective was to compare the bone mass of SxFAD mice with AD-like phenotype to mice without AD. The results demonstrated that SxFAD mice have a progressive loss of bone mass with age. Although previous papers have identified results in mouse AD model, 2019, this is the first time that mice were shown to be SxFAD mouse model. As each mouse model of AD recapitulates a different aspect of the disease, these findings can help determine what common osteoporosis and AD. The findings confirm that AD mice have significantly reduced bone mass, consistent with the development of osteoporosis. The substantial change in bone mass over time between the SxFAD mouse and Wild-type mice suggest that the disease affects bone development.

Introduction | Methodology

Introduction

- Alzheimer's Disease (AD) and Osteoporosis are common degenerative diseases of aging. Previous studies have shown that patients with AD have an increased risk for fractures which can be the result of osteoporosis, suggesting a link between reduced bone mass and AD. This experiment aimed to investigate whether SxFAD mice model which recapitulates many Alzheimer's pathologies. The objective was to compare the bone mass of SxFAD mice with AD-like phenotype to mice without AD.

Methodology

SxFAD and Wild-Type Control Mice

The SxFAD mouse model was generated using CRISPR/Cas9 technology to introduce Alzheimer's pathogenic mutations. SxFAD mice were compared to Wild-Type (WT) mice. Primary intracortical parameters included bone volume, trabecular bone volume (BV/TV), cortical porosity, and bone mineral density (BMD). The primary intracortical parameters included bone volume, trabecular bone volume (BV/TV), cortical porosity, and bone mineral density (BMD). The primary intracortical parameters included bone volume, trabecular bone volume (BV/TV), cortical porosity, and bone mineral density (BMD).

Results and Discussion

Figure 1: X-ray scan of the femur. The left image displays an X-ray of a Wild-Type mouse femur. The right image displays an X-ray of a SxFAD transgenic mouse femur.

Figure 3: Trabecular Bone Volume per Total Volume (BV/TV) Comparison. At 12 months, SxFAD mice show significantly lower BV/TV compared to Wild-Type mice.

Figure 2: 3D Reconstruction of µCT Scanned Trabecular Bone. The Wild-Type mouse shows a dense trabecular network.

Figure 4: Trabecular Bone Volume per Total Volume (BV/TV) Comparison. At 7.5 months, SxFAD mice show significantly lower BV/TV compared to Wild-Type mice.

Figure 5: Cortical Area of Femur Bone. Wild-Type mice show higher cortical bone area.

Figure 6: Cortical Area of Femur Bone. SxFAD mice show significantly lower cortical bone area.

Figure 7: Tame Resistant Acid Phosphatase (TRAP) Staining for Osteoclasts. SxFAD mice show increased osteoclast activity.

Figure 8: Sudan Black B (SBB) senescence Staining. SxFAD mice show increased senescence.

Findings

- The data suggest that SxFAD mouse model recapitulates the low bone mass characteristics of osteoporosis.
- The change in bone density over time observed in the SxFAD mice suggest that the bone mass loss is progressive.
- The data and images collected from the study provide evidence to suggest that the combination mutations in the diseased SxFAD mice have an effect on the bone resorption of the trabecular bone in the SxFAD mice in comparison to the WT mice (Figure 3-5).
- Male SxFAD mice do not experience cortical bone resorption in the same extent observed in female mice (Figure 5, 6).

µCT analysis show that over time male SxFAD mice do not have a decreased cortical bone area in comparison with WT mice. Older female mice exhibit a lower cortical bone area than WT mice.

Conclusions and Future Work

- The current project is in progress, which is a study of the effects of osteoporosis and osteoporosis. The current model could show the same mechanism and pathologies that are driving the effects seen in these mouse models that recapitulate Alzheimer's disease effects on osteoporosis and osteoporosis.
- Considering other mouse models that recapitulate Alzheimer's disease effects on osteoporosis and osteoporosis, our current model could show the same mechanism and pathologies that are driving the effects seen in these mouse models that recapitulate Alzheimer's disease effects on osteoporosis and osteoporosis.
- We will use performing Sudan Black B staining to investigate osteoclast activity in the bone, to understand whether the bone resorption is due to osteoclast activity.
- There have been methods that have been used to investigate osteoporosis, but these methods are not currently used in our model. Although our model recapitulates many Alzheimer's disease pathologies, our model does not currently recapitulate osteoporosis. Continuing to investigate the AD mouse models is vital to further our understanding of these two devastating diseases of aging.

References

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: [\(105 ILCS 305/\) Illinois Mathematics and Science Academy Law](#)

The Academy shall also carry a responsibility to stimulate further excellence for all Illinois schools in mathematics and science. That responsibility may be exercised through any or all of the following means:

1. Stimulating curriculum development and revisions through the collaborative efforts of the interacting institutions involved in the Academy including: universities, secondary schools, the industrial sector and national laboratories

Primary Source Evidence of ROI:

Open Educational Resources: open-access textbooks, manuals, teaching units, and lesson plans that are free to use, have no access restrictions, and can be remixed and adapted

• **Teacher Resources:** created by faculty, staff, and IMSA's Center for Teaching & Learning

• **Kane County Professional Learning Day:** hosted through DC / includes lesson plans also teacher and student handouts

Stakeholders: Illinois Taxpayers

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Open Educational Resources:

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6,236 Institutions

- North Carolina Research and Education Network
- Georgia Department of Education
- Department of Education
- Indiana Department of Education
- Kentucky Department of Education
- Alabama Supercomputer Network
- WV Department of Education
- State of Arkansas

Stakeholders: Illinois Taxpayers

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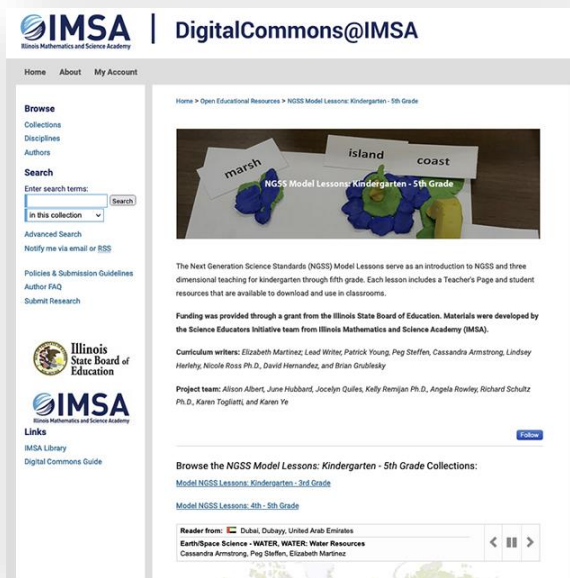
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- City of Aurora
- Department of Education
- Washington School Information Processing Cooperative
- University of Denver
- Virginia Polytechnic Institute and State Univ
- Multnomah Education Service District
- North Carolina Research and Education Network

Grantors:

Next Generation Science Standards (NGSS) Model Lessons

Funding was provided through a grant from the Illinois State Board of Education. Materials were developed by the Science Educators Initiative team from Illinois Mathematics and Science Academy (IMSA).



Next Generation Science Standards (NGSS) Model Lessons:
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IMSA Mission:

DigitalCommons@IMSA furthers IMSA's mission, "To ignite and nurture creative, ethical, scientific minds that advance the human condition"

DigitalCommons Goals:

- Disseminate and promote academic, innovative, and creative achievements of the faculty, staff, and students of the Illinois Mathematics and Science Academy
- Ensure preservation of and persistent access to said work
- Provide a publishing platform for open access content from the Illinois Mathematics and Science Academy
- Document and record IMSA's history and progress
- Foster scholarly collaboration between colleagues

Institutional Benefit:

- ❖ Collections within DigitalCommons are aligned with IMSA's Legislative Charge and its Mission, and front site navigation reflects its Institutional Priorities
- ❖ Customized reports are prepared for external program reviews and reports to the Board of Trustees, and statistics are provided for state appropriations
- ❖ Annual reports are prepared for several departments/programs
- ❖ Monthly, download statistics are shared with Cabinet
- ❖ Monthly, spreadsheet of new additions is shared with Cabinet
- ❖ DC stats are included within the annual State Appropriations
- ❖ Department heads have access to the Dashboard for collections in their areas and they receive monthly download for the purpose of analyzing and reporting
- ❖ Support staff and administrative/executive support receive monthly download statistics for the internal publications they create and maintain, such as course catalogs and conference booklets
- ❖ Project team members are recognized within collection Descriptions

Reflects Institutional Priorities

Equity and Excellence

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Computational Prediction of Mutagenesis in Glycine max Rubisco Activase Monomer for Increased Thermal Stability

Hamza Haq, Vasanth Ramesh, Jaden Wang, and SIR Advisor Dr. Angela Ahrendt present their research at the 2021 SEED conference. [View More](#)

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DigitalCommons@IMSA reflects the scholarly, innovative, and pedagogical culture of the Illinois Mathematics and Science Academy. The goal of this institutional portfolio is to share the intellectual output of IMSA and to increase visibility and impact through worldwide access.

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At a Glance **Work of the Day**

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Digital Commons Guide

Home > Equity and Excellence

The Academy's commitment to diversity, equity and inclusion is evidenced by the Board of Trustees' adoption of an Equity and Excellence policy. This critical policy "institutionalizes" equity work so that, regardless of leaders and other employees who may come and go, "equity", and its attendant required outcomes, remains intact. I invite you to read our policy to understand the depth and breadth of the Academy's focus on the "intentional integration of Cultural Competence, Diversity, Equity, Equity-Minded Frame, Excellence and Inclusion into every facet of the Academy, with the understanding that it is an active and ongoing process involving structures, processes and people and not an isolated initiative."

[Follow](#)

Browse the Equity and Excellence Collections:
[Diversifying STEM Think Tank](#)
[Equity and Excellence Plan](#)
[Publications & Research](#)
[STEM Talks](#)

Customized department reports:

For Board of Trustees and external program reviews.

IMSA

DigitalCommons Report to the English Team
5.3.21

The English team has been creating and disseminating content through two primary collections within IMSA's institutional repository, DigitalCommons, since 2011.

Both collections generate their own statistics and support IMSA's legislative charge: [155 ILCS 305/ Illinois Mathematics and Science Academy Law](#):

1. English Team general collections: *Faculty Publications & Research*, *Roundtable discussion*, *Exemplary Student Work*, etc. <https://digitalcommons.imsa.edu/eng/>
2. English Teacher Resources, open-access teaching units / lesson plans: https://digitalcommons.imsa.edu/eng_hr/

To date, within *Faculty Publications & Research*, etc. there have been:

- 13,940 Full-text Downloads
- 6,100 Metadata Page Hits



ResearchMap: Available data: 12/16/2014 to 5/4/2021

By 905 Institutions – top downloading institutions, include:

- City of Aurora
- University of Alabama
- Texas Southern University
- Delaware State University
- Indian River State College
- Alabama Supercomputer Network
- Indiana Department of Education
- Tennessee State University
- Auburn University
- Oxford University

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In 128 Countries – the top downloading countries include:


- United States (the highest number of downloads in the US are in Washington, Florida, and Illinois)
- United Kingdom
- China
- Philippines
- India
- France
- Canada
- Germany
- Australia
- Singapore

1. "The Academy shall also carry a responsibility to stimulate further excellence for all Illinois schools in mathematics and science. That responsibility may be exercised through any or all of the following means:

1. Stimulating curriculum development and revisions through the collaborative efforts of the interacting institutions involved in the Academy including: universities, secondary schools, the industrial sector and national laboratories."

To date, within English Teacher Resources there have been:

- 110,177 Full-text Downloads
- 14,191 Metadata Page Hits



ResearchMap: Available data: 12/16/2014 to 5/4/2021

IMSA

By 5,317 Institutions – almost all of the top 100 downloading institutions are within Education:

- North Carolina Research and Education Network
- Georgia Department of Education
- City of Aurora
- Department of Education
- Indiana Department of Education
- University of Missouri – DSA the Missouri Research and Education Network
- Trinidad State Junior College
- Kentucky Department of Education
- Washington School Information Processing Cooperative
- Alabama Supercomputer Network

In 183 Countries – top downloading countries include:

- United States (the highest number of downloads in the US are in California, Texas, New York, and Illinois)
- Canada
- Philippines
- United Kingdom
- India
- Russian Federation
- China
- Germany
- Australia
- France

In addition, the English team contributes content through various IMSA programs that maintain their own statistics:

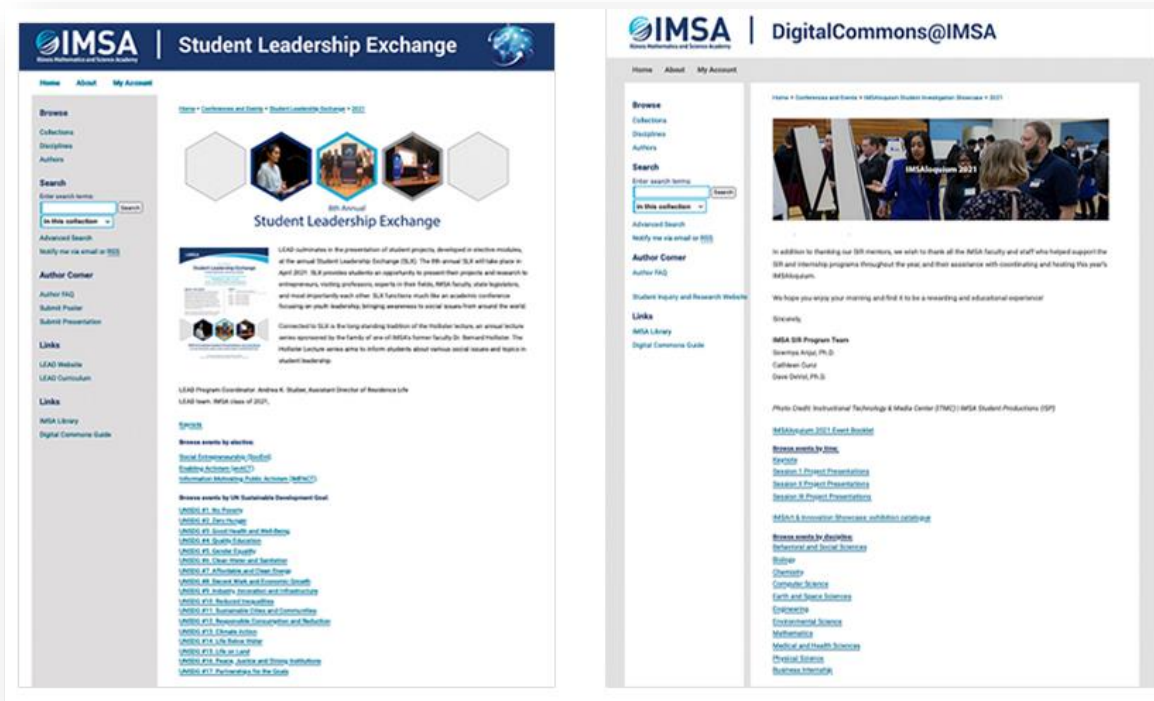
- Presenters at [Professional Learning Day / King County Institute Day](#)
- Advisors for SIR students presenting at [IMSAForum](#)

They also feature a collection of Distinguished Student Work through the [Award for Excellence in Expository Writing](#).

IMSA

Collecting data:

Yes, there has always been a need to sort content within DigitalCommons:



Faculty and Staff:

2008 Strategic Plan:

Strategy 4: *We will generate scholarship that discovers, integrates, applies and transfers knowledge produced by our work*

Good News: We do!

The DigitalCommons@IMSA repository was implemented to share scholarly works by IMSA faculty, staff, and students. The repository is a source for both external educators and researchers seeking articles and teacher resources. Content includes, but is not limited to:

Electronic versions of full text scholarly works • Published, peer-reviewed literature • Author's accepted manuscripts • Books and book chapters • Conference papers, posters, and presentations • IMSA-hosted conference papers, posters, and presentations • Creative works (art, photography, mixed media, music, and videorecordings) • Classroom/teacher resources: lesson plans, teaching units • Lectures, keynotes, speeches, and talks • Podcasts and webinars • Working papers and technical reports • Unpublished scholarly and creative works • Unpublished studies and interviews

Individual Benefit:

Action taken on recommendations from the Scholarship and Innovation Committee

- ❖ Faculty and staff are recognized for academic and creative achievement through IMSA's social media, *regardless of the the status in DigitalCommons*
- ❖ The slideshow that runs outside of the library includes *Faculty/Staff Publications & Research* and academic achievement throughout the year
- ❖ The President and Cabinet are included on email confirmations to authors and presenters at the point their content has been published in DigitalCommons – so that they can also recognize them
- ❖ Annual Leon Lederman Scholar Award
- ❖ Expert Gallery
- ❖ Stipends

Students:

We're recognizing some of their best work: content includes, but is not limited to:

- ❖ Publications & Research
- ❖ Independent Study
- ❖ Distinguished Student Work
- ❖ Exemplary Project Work
- ❖ Leadership Roles
- ❖ Service Learning

Good News: It's possible to build portfolios for all students on a foundation of their best work, beginning sophomore year.

Individual Benefit:

Aligned with individual benefits for faculty and staff:

- ❖ Students are recognized for academic and creative achievement through IMSA's social media, *regardless of the the status in DigitalCommons*
- ❖ The slideshow that runs outside of the library includes *Student Publications & Research* and *Distinguished Student Work* throughout the year
- ❖ The President and Cabinet are included on email confirmations to authors and presenters at the point their content has been published in DigitalCommons – so that they can also recognize them
- ❖ Student Portfolios
- ❖ Stipends

Recognition for their work:

Service Learning students help develop and maintain certain collections within DC:

The screenshot displays the IMSA Digital Commons website interface. The top navigation bar includes the IMSA logo, the text "DigitalCommons@IMSA", and links for "Home", "About", and "My Account". A left sidebar contains sections for "Browse" (Collections, Disciplines, Authors), "Search" (with a search box and filters), "Author Corner" (Author FAQ), "President's Website", and "Links" (MSA Library, Digital Commons Guide, Featured Exhibits). The main content area features a header for "The President & CEO" and a section titled "MESSAGE FROM THE PRESIDENT". This section includes a portrait of Evan M. Glazer and a message dated 7/1/2021. The message text reads: "Dear IMSA Colleagues, It's a great honor to start my tenure as president of the Illinois Mathematics and Science Academy. I am truly thrilled to return to my home state, joyful to be part of this exceptional STEM institution, and humbled to be surrounded by some of the most talented educators. Regardless of your role at IMSA, we are all educators to ignite and nurture creative, ethical, scientific minds that advance the human condition. I chose IMSA because of its distinguished reputation as a laboratory for imagination and inquiry, and also a place where equity and excellence are a priority. With 18 years of leadership experience, focusing on STEM schools and progressive models of education, I couldn't imagine another place on earth that aligns better with my identity." Below the message, there is a "Download" button and a "Full Screen" button. A "Messages from 2021" section at the bottom lists the message with a PDF icon and the title "Message from the President / 7.1.21, Evan M. Glazer".

**We're Really Good
Storytellers!**

Archives & Special Collections:

Supports Alumni, Employee, and Student Engagement

Furtheres DigitalCommons 4th Goal: “Document and record IMSA’s history and progress”



The Archives serves to collect and preserve materials relating to the history and ethos of the Illinois Mathematics and Science Academy.

The Digital Collections contain a significant portion of the material currently in the Physical Collection as well as content unique to DC.

Lecture Series:

Several lecture series have been established to present issues of contemporary concerns to the students and staff of IMSA. Three have been established in honor of people important in the history of IMSA. The IMSA Great Minds Program® was established by our founder, Dr. Leon Lederman in order to bring established scholars, especially in the sciences, to IMSA.

Eugene A. Cernan • Robert F. Kennedy Jr. • James Lovell • Sally Ride • Maya Angelou • Carl Sagan • Lawrence Kushner • Rosa Parks



IMSA Oral Histories:

Reaching Out: Expanding the Presence of IMSA's Archives

An ongoing project, funded in part by a grant from the Hansen-Furnas Foundation. The project team includes Dr. Sara Goek '06, Dr. Christian Nøkkentved, and Jean Bigger



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Questions?