



The Web of Science

DR. GHARRAVI

SHAHROUD UNIVERSITY OF MEDICAL SCIENCES

- ▶ **1 –Getting started with Web of Science**
- ▶ Presenting Web of Science and the Core Collection
- ▶ Accessing the Web of Science
- ▶ Searching keywords and refining results
- ▶ Using the operator NEAR
- ▶ Looking for one document
- ▶ Building complex searches and reading full texts

آی اس آی ISI، وب آو ساینس web of science، تامسون رویترز
و کلاریویت آنالیتیکس...

2

➤ **موسسه ISI که مخفف کلمه Institute for Scientific Information می باشد و به "موسسه اطلاعات علمی" مشهور است در سال ۱۹۶۰ توسط یوجین گارفیلد تاسیس شد.**

➤ **موسسه ISI در سال ۱۹۹۲ به خاطر بیماری یوجین گارفیلد به شرکت تامسون فروخته و به عنوان Thomson ISI شناخته شد. شرکت تامسون در سال ۲۰۰۲ شرکت رویترز را نیز خریداری کرده و شرکت تامسون رویترز (Thomson Reuters) تشکیل شد که دفتر مرکزی اش در نیویورک قرار دارد.**

➤ **در سال ۲۰۱۶ شرکت تامسون رویترز بخش علمی خود را به شرکت کلاریویت آنالیتیکس (Clarivate Analytics) فروخت.**

Presenting Web of Science and the Core Collection

Streamline your research to accelerate breakthroughs

Web of Science platform



Web of Science Core Collection

Accelerate your research using a linked citation network of content from the world's leading journals, conferences and books.



Data Citation Index

Access data sets to validate study findings or reuse in your own work.



Derwent Innovations Index

Easily uncover hidden technical information disclosed exclusively in patent documents.



4 regional citation indexes

Discover content from locally focused journals throughout Latin America, South Africa, Mainland China, South Korea, and the Arab world.



4 life sciences databases

Explore the full spectrum of biomedical literature from agriculture to public health to zoology.



3 specialty collections

Find content relevant to researchers in many fields including physics, engineering, and food science.

Web of Science platform

Streamline your research to accelerate breakthroughs



- Identify new opportunities to advance your research
- Monitor diverse outputs for new discoveries, potential partners, trending topics, and commercial opportunities

Content and data

- 187.8 million total records
- 2.1 billion cited references
- 18.5 million open access records
- 103 million patents for 51 million inventions
- 13.3 million datasets
- 34,800+ journals
- 254 subject categories

Accessing the Web of Science

6

- ▶ <https://www2.wosgs.ir/wos/woscc/basic-search>

Dr. Gharr

Accessing the Web of Science

<http://www.webofscience.com/>

- Working on-site (IP range) – No credentials required
- Working remotely (3 options)
 - with VPN
 - via your institution's proxy authentication page
 - with your personal account

Searching keywords and refining results

7



DOCUMENTS

RESEARCHERS

Search in: **Web of Science Core Collection** ^ Editions: All v

All Databases

Web of Science Core Collection

KCI-Korean Journal Database

SciELO Citation Index

Title

+ Add row

Web of Science Core Collection (1945-present)

Search the world's leading scholarly journals, books, and proceedings in the sciences, social sciences, and arts and humanities and navigate the full citation network.

- All cited references for all publications are fully indexed and searchable.
- Search across all authors and all author affiliations.

DOCUMENTS

RESEARCHERS

Search in: **Web of Science Core Collection** v Editions: **All** ^

DOCUMENTS

CITED REFERENCES

Title

Example: water cons
liver transplant

+ Add row

+ Add date range

Advanced Search

 Select All Science Citation Index Expanded (SCI-EXPANDED)--1945-present Social Sciences Citation Index (SSCI)--1956-present Arts & Humanities Citation Index (AHCI)--1975-present Conference Proceedings Citation Index – Science (CPCI-S)--1990-present Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH)--1990-present

DOCUMENTS

RESEARCHERS

Search in: Web of Science Core Collection ▾ Editions: All ▾

DOCUMENTS

CITED REFERENCES

Title ▾

Example: water consum*
liver transplant

+ Add row

+ Add date range

Advanced Search

DOCUMENTS

RESEARCHERS

Name Search ▾

Name Search

Author Identifiers

Organization

Organization

Organization

Find author records by searching for organizations with which an author is affiliated, based on the address field in an associated full record of an article.

Choose which publications are considered as part of the search using the radio buttons.

Examples:

University of Oxford

DOCUMENTS

RESEARCHERS

Organization

- Most recent publications
- Publications within 5 years
- All publications

Organization

shahroud univer

Shahroud University Medical Sciences

× Clear

Search

468 results from the Web of Science for:

Shahroud University Medical Sciences (Organization)

Refine results

Quick Filters

- Includes Web of Science Core Collection ... 468
- Includes peer reviews 24
- Includes editor records 2

Author name

- Ebrahimi, Hossein 4
- Salehi, Majid 4
- Hosseinzadeh, Ali 3
- Javid, Allahbakhsh 3
- Khosravi, A. 3

[See all](#)

Organizations

- Shahroud University Medical Sciences 468
- Tehran University of Medical Sciences 43
- Islamic Azad University 31
- Shahid Beheshti University Medical Scien... 18
- Isfahan University Medical Science 15

[See all](#)

0/468

View as combined record

Merge Records

Relevance

< 1 of 10 >

1

Emamian, Mohammad Hassan ✓

Shahroud University Medical Sciences

Ophthalm Epidemiol Res Ctr

SHAHROUD, IRAN

Web of Science ResearcherID: G-1077-2011

Published names: Emamian, M. H. Emamian, Mohammad H. [more...](#)

Top Journals: Journal of Current Ophthalmology, Clinical and Experimental Optometry, Iranian Journal of Public Health

[Recent publications](#)

2007-2023

Years

Documents: 149

Peer Reviews: 21

2

Atashi, Amir ✓

Shahroud University Medical Sciences

Stem Cell & Tissue Engn Res Ctr

SHAHROUD, IRAN

Web of Science ResearcherID: B-1715-2017

Published names: Atashi, A. Atashi, A

Top Journals: Toxicology Letters, Cell Journal, Molecular Biology Reports

2005-2021

Years

Documents: 100

Search > Results for CHATBOT MEDICINE (All Fields)

243 results from Web of Science Core Collection for:

CHATBOT MEDICINE (All Fields)

Analyze Results

Citation Report

[Copy query link](#)

Publications




You may also like...

Refine results

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Filter by Marked List

Quick Filters

-  Highly Cited Papers 1
-  Review Article 22
-  Early Access 5

 0/243[Add To Marked List](#)[Export ▾](#)

Sort by: Relevance ▾

- 1 [Programming Tools for Messenger-based Chatbot System Organization: Implication for Outpatient and Translational Medicines](#)

[Abashev, A](#); [Grigoryev, R](#); (...); [Boyko, V](#)Jun 2017 | [BIONANOSCIENCE](#) 7 (2), pp.403-407

The implementation of translational **medicine** is associated with considerable costs of equipment, staff competence, and doctor-patient (DP) and clinic-patient (CP) communication. The application of DP and CP systems evolved from e-mail letters to website assistance chat and smartphone apps in the context of the m-health paradigm. The rapid development of mobile messengers and **chatb**... [Show more](#)

14

Citation

35

Reference

Performance of ChatGPT on USMLE: Potential for AI-Assisted Medical Education Using Large Language Models

Tiffany H. Kung^{1,2}; Morgan Cheatham³; ChatGPT⁴; Arielle Medenilla¹; Czarina Sillos¹; Lorie De Leon¹; Camille Elepaño¹; Maria Madriaga¹; Rimel Aggabao¹, Giezel Diaz-Candido¹; James Maningo¹; Victor Tseng^{*1,5}

Author Affiliations:

¹AnsibleHealth, Inc (Mountain View, CA)

²Department of Anesthesiology, Massachusetts General Hospital, Harvard School of Medicine (Boston, MA)

³Warren Alpert Medical School; Brown University (Providence, RI)

⁴OpenAI, Inc; (San Francisco, CA)

⁵Department of Medical Education, UWorld, LLC (Dallas, TX)

ABSTRACT

81
82
83 We evaluated the performance of a large language model called ChatGPT on the United States Medical
84 Licensing Exam (USMLE), which consists of three exams: Step 1, Step 2CK, and Step 3. ChatGPT
85 performed at or near the passing threshold for all three exams without any specialized training or
86 reinforcement. Additionally, ChatGPT demonstrated a high level of concordance and insight in its
87 explanations. These results suggest that large language models may have the potential to assist with
88 medical education, and potentially, clinical decision-making.

Found 1 result for *chatgpt*[Author]

Save

Editorial > Nurse Educ Pract. 2023 Jan;66:103537. doi: 10.1016/j.nepr.2022.103537.

Epub 2022 Dec 16.

Open artificial intelligence platforms in nursing education: Tools for academic progress or abuse?

Siobhan O'Connor¹ ChatGPT²

Affiliations + expand

PMID: 36549229 DOI: 10.1016/j.nepr.2022.103537

No abstract available

243 publications selected from Web of Science Core Collection

Web of Science Categories

Sort by:

Results count

Show:

25

Minimum record count:

1

Visualization:

TreeMap Chart

Number of results:

10

DOWNLOAD

76
Health Care Sciences Services

25
Public Environmental
Occupational Health

24
Computer Science
Information Systems

17
Computer
Science
Interdisciplinary
Applications

243 publications selected from Web of Science Core Collection

Citation Topics Meso

Sort by:

Results count

Show:

25

Minimum record count:

1

Visualization:

TreeMap Chart

Number of results:

10

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72

1.44 Nutrition & Dietetics

15

4.48 Knowledge Engineering & Representation

9

1.104 Virology - General

9

1.189 Genome Studies

Search > Results for CHATBOT MEDI... > Analyze Results: CHATBOT ... > Citation Report: CHATBOT MEDICINE (All Fields)

Citation Report

CHATBOT MEDICINE (All Fields)

Analyze Results

Create Alerts

Export Full Report

Publications

243

Total

From 1945 ▾ to 2023 ▾

Citing Articles

1,231 [Analyze](#)

Total

1,124 [Analyze](#)

Without self-citations

Times Cited

1,753

Total

1,463

Without self-citations

7.21

Average per item

22

H-Index

Times Cited and Publications Over Time

DOWNLOAD

Long-term **air pollution** exposure and cardio- respiratory mortality: a review

By: Hoek, G (Hoek, Gerard) [1]; Krishnan, RM (Krishnan, Ranjini M.) [2]; Beelen, R (Beelen, Rob) [1]; Peters, A (Peters, Annette) [3]; Ostro, B (Ostro, Bart) [4]; Brunekreef, B (Brunekreef, Bert) [1], [5]; Kaufman, JD (Kaufman, Joel D.) [2]

[View Web of Science ResearcherID and ORCID](#) (provided by Clarivate)

ENVIRONMENTAL HEALTH

Volume: 12
Article Number: 43
DOI: 10.1186/1476-069X-12-43
Published: MAY 28 2013
Indexed: 2013-05-28
Document Type: Review

Abstract

Current day concentrations of ambient air pollution have been associated with a range of adverse health effects including cardiovascular and respiratory diseases. In this review, we summarize the evidence from epidemiological studies on the association between long-term exposure to ambient air pollution and mortality from cardiovascular diseases.

Citation Network

In Web of Science Core Collection

1,153
Citations

Create citation alert

1,174 Times Cited in All Databases	80 Cited References View Related Records
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+ See more times cited

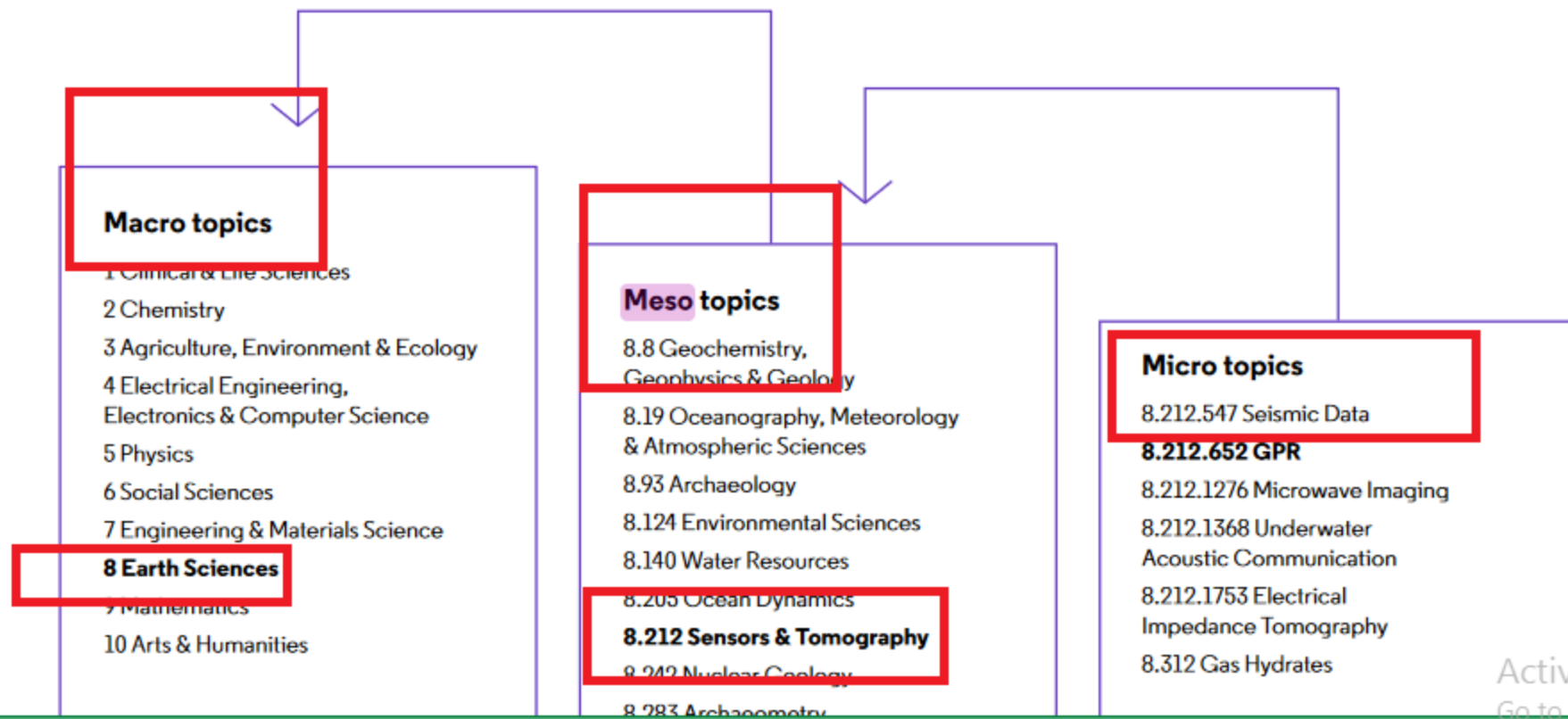
Use in Web of Science


Web of Science Usage Count

40 Last 180 Days	621 Since 2013
----------------------------	--------------------------

[Learn more](#)

Figure 1: Three levels of the Citation Topics hierarchy described for Earth Sciences



 As of September/October 2022, this **highly cited paper** received enough citations to place it in the top 1% of the academic field of **Clinical Medicine** based on a highly cited threshold for the field and publication year.



Data from *Essential Science Indicators*

 This **hot paper** was published in the past two years and received enough citations in September/October 2022 to place it in the top 0.1% of papers in the academic field of **Clinical Medicine**.

Data from *Essential Science Indicators*

Highly Cited شاخص مقالات پر استناد: مقالات پر استناد، مقالاتی است که در طی دوره ده سال اخیر، بیشترین استناد را کسب کرده و جزء ۱٪ بالای هر حوزه موضوعی باشند. برای مقالات و موضوعاتی کاربرد دارد که به سبب ماهیت، سالیان سال به آنها استناد می شود.

Hot Papers شاخص مقالات داغ: مقاله های داغ، عبارت از مقاله هایی است که در طی دوره دو سال گذشته انتشار یافته و بیشترین استناد را به دست آورده باشند. مقالاتی که خیلی سریع نسبت به مقالات مشابه در همان حوزه موضوعی و همان بازه زمانی، استناد دریافت میکنند؛ به عنوان مقالات داغ شناخته میشوند. ملاک محاسبه، تاریخ انتشار نیست. مقالات مربوط به دو سال اخیر، در بازه دو ماه اخیر مورد بررسی قرار میگیرد و مقالاتی که در این بازه زمانی دو ماهه، بیشترین استناد را گرفته و از لحاظ تعداد استنادهای دریافتی در رشته موضوعی خود در زمره مقالات یک دهم درصد (۰/۱ %) برتر قرار گرفته است به عنوان مقالات داغ شناسایی می شوند. (فقط استنادات دو ماه قبل، شمارش میشود نه کل دو سال).

Top Papers شاخص مقالات برتر: از مجموع دو شاخص **Highly Cited** و **Hot Papers** این شاخص بدست می آید. یعنی مقالات برتر در هر حوزه موضوعی در واقع مقالاتی است که دارای بیشترین استناد بوده و در دو ماهه اخیر جزء مقالات با ۰/۱ % استناد آن حوزه باشند.

Using the operators () wild card,
NEAR..

Wildcards

Valid only with languages using the Latin alphabet.

Wildcards represent unknown characters.

- The **asterisk** (*) represents any group of characters, including no character.
- The **question mark** (?) represents any single character.
- The **dollar sign** (\$) represents zero or one character.

Multi-wildcard Example

organi?ation* matches:

- organisation
- organizations
- organizational
- organisations

Asterisk

s*food matches:

- seafood
- soyfood

Dollar Sign

The dollar sign (\$) is useful for finding both the British and American spellings of the same word. For example, *flavo\$r* finds *flavor* and *flavour*.

colo\$r matches:

- color
- colour

Question Mark

Question Mark

The question mark (?) is useful for searching last names of authors where the last character is uncertain. For example, Barthold? finds Bartholdi and Bartholdy. It will not find Barthold.

wom?n matches:

- woman
- women

Avoid using wildcards in search queries with very broad truncation matches. For example, a search on UT=*2 or UT=*2* or UT=*22 or UT=*22* may return incomplete results (or no results) because there are too many matches.

Activate Windows

Operator	Description	Example	Exceptions
AND	Finds records containing all terms separated by the operator Our product uses an implicit AND operator when you enter two or more adjacent terms in most fields.	Beverage AND bottle AND beer rainbow trout fish farm is equivalent to rainbow AND trout AND fish AND farm	Implied AND does not apply to Chinese-language search queries.
OR	Finds records containing any of the terms separated by the operator	Beverage OR bottle finds records containing beverage or bottle or both search terms	
NOT	Excludes records containing certain words from your search	Beverage NOT bottle finds records containing beverage but excludes records containing bottle	Activate Windows Go to PC settings to activate Windows.

Booleans in Address Field

When you search for organization names that include a Boolean operator (AND, NOT, NEAR, and SAME), always enclose the operator in quotation marks (" "). For example:

- "Near" East Univ
- "OR" Hlth Sci Univ

You can also enclose the entire query in quotation marks. For example:

- "Near East Univ"
- "OR Hlth Sci Univ"

Operator	Description	Example	Exceptions
NEAR/x	<p>Use NEAR/x to find records where the terms joined by the operator are within a specified number of words of each other.</p> <p>Replace the x with a number to specify the maximum number of words that separate the terms.</p> <p>If you use NEAR without /x, the system will find records where the terms joined by NEAR are within 15 words of each other. For example, these searches are equivalent:</p> <ul style="list-style-type: none"> • salmon NEAR virus • salmon NEAR/15 virus <p>Always enclose NEAR in quotation marks (" ") when it appears in the title of a source item such as a journal, book, proceeding, or other type of work.</p> <p>Valid Search Example</p> <p>Atomistic simulations of a solid/liquid interface: a combined force field and first principles approach to the structure and dynamics of acetonitrile "near" an anatase</p>	<p>Beverage NEAR/5 bottle finds records containing both beverage and bottle. The two words must be within five words of each other</p> <p>TS = (Germany NEAR/10 "monetary union")</p> <p>TS = (Germany NEAR/10 (monetary NEAR/0 union))</p> <p>NEAR/0 means words joined by the operator should be adjacent.</p>	<p>You cannot use the AND operator in queries that include the NEAR operator. For example, the following query is not valid:</p> <p>TS = (Germany NEAR/10 (monetary AND union))</p> <p>Activate Windows Go to PC settings to activate Windows.</p>

	If you leave out the quotation marks, the system returns an error: Search Error: Invalid use of NEAR operator.
Same	In Address searches, use SAME to restrict your search to terms that appear in the same address within a Full Record AD=(McGill Univ SAME Quebec SAME Canada) finds records in which McGill University appears in the Addresses field of a Full Record along with Quebec and Canada

Search Operator Precedence

If you use different operators in your search, the search is processed according to this order of precedence:

1. NEAR/x
2. SAME
3. NOT
4. AND
5. OR

Use parentheses to override operator precedence. For example:

- **influenza OR flu AND avian** finds records containing the word *influenza*. It also finds records containing both *flu* and *avian*.
- **(influenza OR flu) AND avian** finds records containing both *influenza* and *avian* or both *flu* and *avian*.
- **copper OR lead AND algae** finds all records in which both lead AND algae are present as well as all records in which the word copper is present.
- **(copper OR lead) AND algae** finds all records in which the word algae is present together with either copper or lead.

Activate Windows
Go to PC settings to activate Windows

Use of Parentheses

Use parentheses to override [operator precedence](#). The expression inside the parentheses is executed first.

(cadmium AND gill*) NOT Pisces finds records containing both cadmium and gill (or gills), but excludes records containing the word *Pisces*.

(salmon OR pike) NEAR/10 virus find records containing salmon or pike within 10 words of virus.

Advanced Searching Techniques

Introduction

Ovid

PubMed

Web of Science

Advanced Searching in Web of Science

Search Operators

Web of Science processes search queries from left to right. To specify precedence, enclose terms and operators in parentheses within your search statement. You can nest and combine a search statement with the following operators:

AND	To find records containing all terms [Example: blood pressure AND stroke]
OR	To find records containing any of the terms [Example: myocardial infarction OR heart attack]
NOT	Exclude records containing certain words in your search [Example: cardiovascular disease NOT heart attack]
NEAR	To find records containing all terms within a certain number (n) of each other [Example: stress NEAR/3 sleep]
SAME	Search terms that must occur within the same sentence [Example: Tufts SAME Boston, biodivers* same conserv*]

Example: (myocardial infarction **OR** heart attack) **AND** blood pressure

TI=("kidney transplantation" NEAR/2 stone)

Analyze Results Citation Report Create Alert

Copy query link

Publications You may also like...

Refine results

Search within results...

Filter by Marked List

Quick Filters

- Review Article 1
- Open Access 2

Citation Topics Meso

- 1.243 Kidney Diseases 2
- 1.157 Organ Donation & Transplantation 1

0/5 Add To Marked List Export Sort by: Relevance 1 of 1

1 Stone disease in kidney transplantation 12 Citations

[Tigit, B; Aydin, S, \(...\); Altac, S](#)
Joint Meeting of the Turkish-Transplantation-Society and Eurotransplant
Jan-feb 2004 | [TRANSPLANTATION PROCEEDINGS](#) 36 (1) , pp.187-189

8 References

The aim of this study was to evaluate etiologic, diagnostic, and management aspects of stone disease in renal transplant recipients and donors. Calculi from five patients were analyzed. The immunosuppressive regimen included tacrolimus or cyclosporine, mycophenolate mofetil, and corticosteroids in all ca ... [Show more](#)

[Full Text at Publisher](#) ... [Related records](#)

2 Kidney Allograft Stone after Kidney Transplantation and its Association with Graft Survival 9 Citations

[Rezaee-Zavareh, MS; Ajudani, R; \(...\); Einollahi, B](#)

19 results from Web of Science Core Collection for:

TI=(kidney transplantation stone)

Copy query link

References 3

8
3
1
1

Profiles
2
2
2
2

The aim of this study was to evaluate etiologic, diagnostic, and management aspects of stone disease in renal transplant recipients and donors. Calculi from five patients were analyzed. The immunosuppressive regimen included tacrolimus or cyclosporine, mycophenolate mofetil, and corticosteroids in all ca ... [Show more](#)

[Full Text at Publisher](#)

[Related r](#)

Stone-bearing live-donor kidneys for transplantation

[Devasia, A](#); [Chacko, N](#); (...); [Gopalakrishnan, G](#)

Feb 2005 | [BJU INTERNATIONAL](#) 95 (3), pp.394-397

Objective To evaluate potential donor kidneys with asymptomatic calculi detected during screening, and the management of the calculus before, during and after transplantation, as with fewer live donors, marginal kidneys and donors are a significant subgroup in renal transplantation. ... [Show more](#)

[Full Text at Publisher](#)

31
Citations

12
Reference

[Related r](#)

ACCIDENTAL TRANSPLANTATION OF A KIDNEY WITH STONES - CASE-REPORT

[CITTERIO, E](#); [GRASSETTI, F](#); (...); [CASTAGNETO, M](#)

1ST INTERNATIONAL CONGRESS OF SOCIETY FOR ORGAN SHARING : WORLD COOPERATION IN TRANSPLANTATION

Oct 1991 | [TRANSPLANTATION PROCEEDINGS](#) 23 (5), pp.2650-2650

[Full Text at Publisher](#)

11
Citations

2
Reference

[Related r](#)

35 results from Web of Science Core Collection for:

TI=(breastf* NEAR/2 diabetes)

Analyze Results

Citation Report

Copy query link

Publications

You may also like...

Refine results

Search within results...

Filter by Marked List

Quick Filters

- Review Article 5
- Early Access 1
- Open Access 10
- Enriched Cited References 2

0/35

Add To Marked List

Export

Sort by: Relevance

1

[Gestational Diabetes and Breastfeeding Among Women of Different Races/Ethnicities: Evidence from the Pregnancy Risk Assessment Monitoring Surveys](#)

Hebert, LE; Nikolaus, CJ; (...); Sinclair, KA

Jul 2022 (Early Access) | [JOURNAL OF RACIAL AND ETHNIC HEALTH DISPARITIES](#)

Enriched Cited References

Objective To examine risk factors for gestational diabetes mellitus (GDM) and factors associated with breastfeeding patterns among women with GDM from different racial/ethnic groups.

Methods We used data from Phase 8 (2016-2018) of the Pregnancy Risk Assessment Monitoring Surveys. [Show more](#)

35

Refer

Looking for one document citation when and who?

32


- 2 [Electrospun captopril-loaded PCL-carbon quantum dots nanocomposite scaffold: Fabrication, characterization, and in vitro studies](#)

14
Citations

32
References

[Ghorghi, M](#); [Rafienia, M](#); (...); [Zarrabi, A](#)

Dec 2020 | Aug 2020 (Early Access) | [POLYMERS FOR ADVANCED TECHNOLOGIES](#) 31 (12) , pp.3302-3315

 Enriched Cited References

Electrospinning as an effective and accessible method is known to yield scaffolds with desired physical, chemical, and biological properties for tissue engineering. In the present study, captopril (CP)-loaded polycaprolactone (PCL)/carbon quantum dots (CQDs) nanocomposite scaffolds were fabricated for bone tissue regeneration. The microstructure and hydrophilicity/hydrophobicity ratio of scaffo ... [Show more](#)

 [View full text](#) ...

[Related records](#)

[Full text at publisher](#)[Export](#)[Add To Marked List](#)[<](#) 2 of 2 [>](#)

Electrospun captopril-loaded PCL-carbon quantum dots nanocomposite scaffold: Fabrication, characterization, and in vitro studies

By: [Ghorghi, M \(Ghorghi, Mina\)](#) [1]; [Rafienia, M \(Rafienia, Mohammad\)](#) [2]; [Nasirian, V \(Nasirian, Vahid\)](#) [3]; [Bitaraf, FS \(Bitaraf, Fatemeh S.\)](#) [4]; [Gharravi, AM \(Gharravi, Anneh M.\)](#) [5]; [Zarrabi, A \(Zarrabi, Ali\)](#) [6]

[View Web of Science ResearcherID and ORCID](#) (provided by Clarivate)

POLYMERS FOR ADVANCED TECHNOLOGIES

Volume: 31 Issue: 12 Page: 3302-3315

DOI: 10.1002/pat.5054

Published: DEC 2020

Early Access: AUG 2020

Indexed: 2020-08-27

Document Type: Article

Jump to

[★ Enriched Cited References](#)

Abstract

Electrospinning as an effective and accessible method is known to yield scaffolds with desired physical, chemical, and biological properties for tissue engineering. In the present study, captopril (CP)-loaded polycaprolactone (PCL)/carbon quantum dots (CQDs) nanocomposite scaffolds were fabricated for bone tissue regeneration. The microstructure and hydrophilicity/hydrophobicity ratio of scaffolds were assessed by scanning electron microscopy and wettability test, respectively. The results showed that the presence of CQDs and CP in the scaffolds decreased the fiber diameter (1180 +/- 281.5-345 +/- 110 nm) and also it led to an increase in the surface hydrophilicity (137 degrees-0 degrees) of scaffolds. Evaluation of the scaffolds' functional groups was performed using Attenuated Total Reflectance-Fourier Transform Infrared spectroscopy. The ultimate tensile strength of scaffolds was in the range of 6.86 +/- 0.00 to 22.09 +/- 0.06 MPa. Distribution of CQDs in the scaffolds' fibers was investigated by transmission electron microscopy and fluorescent spectrometer. The cell viability, attachment, proliferation, and alkaline phosphatase (ALP) activity of scaffolds were assessed in vitro. Based on the overall results, the scaffold containing CQDs and CP led to a significant increase in the cells' proliferation and ALP activity. Therefore, the PCL/CQDs/CP is recommended as a potential nanocomposite scaffold for bone tissue regeneration.

Keywords

Citation Network

In Web of Science Core Collection

14

Citations

[Create citation alert](#)

14

Times Cited in All
Databases

32

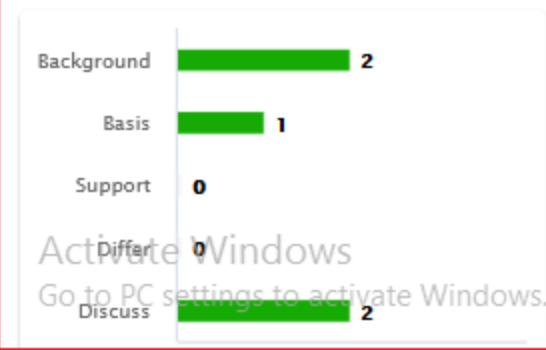
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[Zhou, A; Chen, SA; \(...\); Hu, YJ](#)

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50

References

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Developing a bioactive scaffold with biocompatible material is a substantial approach to bone regeneration and functional healing. Hydroxyapatite (HAP) is the main component in bone formation as an inorganic component and regeneration due to its osteoconductive properties. In this study, we prepared a scaffold material composed of HAP and collagen (COL) cross-linked via carb ... [Show more](#)

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"Due to the presence of cadmium and heavy indium metals, the quantum dots (QDs) (semiconductor nanocrystals smaller than the Bohr radius with noteworthy optical and electrical properties) produces some toxicity in medical applications (Luo et al., 2013; Ghorghi et al., 2020)."

Found in "Introduction"

Section: Introduction

Classification: Background

"They concluded that the scaffold containing CQDs and CP significantly increased the MG-63 human osteoblast-like cells proliferation and ALP activity in-vitro (Ghorghi et al., 2020)."

Found in "Introduction"

- 1 Fabrication and Evaluation of In Vitro Studies of Biodegradable and Antibacterial Composite Scaffolds Based on Polylactic Acid-Polycaprolactone- Hydroxyapatite Reinforced with Graphene and Zinc Oxide Nanoparticles for Use in Orthopedic Surgery

[Firoozabadi, FD](#); [Saadatabadi, AR](#) and [Asefnejad, A](#)

Jun 2022 | [IRANIAN JOURNAL OF MATERIALS SCIENCE AND ENGINEERING](#) 19 (2) , pp.1-19

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Introduction: Fabrication of fully optimized tissue-engineered materials in order to simulating the natural structure, and enhancing the biological properties of damaged tissue is one of the major challenges in biomedical engineering and regeneration medicine. Although polymeric based membranes have revealed noticeable advancements in bone regeneration, their mechanical stiffer ... [Show more](#)

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" According to current studies, the cell/scaffold interaction can be improved with increasing the electrical conductivity of fabricated nanocomposite coatings (58)."

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Section: Methods

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Electrospun captopril-loaded PCL-carbon quantum dots nanocomposite scaffold: Fabrication, characterization, and in vitro studies

By: Ghorghi, M (Ghorghi, Mina) ^[1]; Rafienia, M (Rafienia, Mohammad) ^[2]; Nasirian, V (Nasirian, Vahid) ^[3]; Bitaraf, FS (Bitaraf, Fatemeh S.) ^[4]; Gharravi, AM (Gharravi, Anneh M.) ^[5]; Zarrabi, A (Zarrabi, Ali) ^[6]

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DOI: 10.1002/pat.5054

Published: DEC 2020

Early Access: AUG 2020

Indexed: 2020-08-27

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Abstract

Electrospinning as an effective and accessible method is known to yield scaffolds with desired physical, chemical, and biological properties for tissue engineering. In the present study, captopril (CP)-loaded polycaprolactone (PCL)/carbon quantum dots (CQDs) nanocomposite scaffolds were fabricated for bone tissue regeneration. The microstructure and hydrophilicity/hydrophobicity ratio of scaffolds were assessed by scanning electron microscopy and wettability test, respectively. The results showed that the presence of CQDs and CP in the scaffolds decreased the fiber diameter (1180 +/- 281.5-345 +/- 110 nm) and also it led to an increase in the surface hydrophilicity (137 degrees-0 degrees) of scaffolds. Evaluation of the scaffolds' functional groups was performed using Attenuated Total Reflectance-Fourier Transform Infrared spectroscopy. The ultimate tensile strength of scaffolds was in the range of 6.86 +/- 0.00 to 22.09 +/- 0.06 MPa. Distribution of CQDs in the scaffolds' fibers was investigated by transmission electron microscopy and fluorescent spectrometer. The cell viability, attachment, proliferation, and alkaline phosphatase (ALP) activity of scaffolds were assessed in vitro. Based on the overall results, the scaffold containing CQDs and CP led to a significant increase in the cells' proliferation and ALP activity. Therefore, the PCL/CQDs/CP is recommended as a potential nanocomposite scaffold for bone tissue regeneration.

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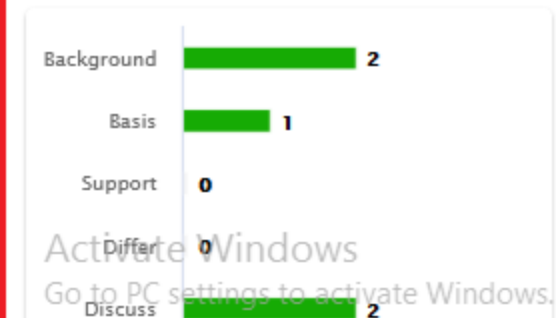
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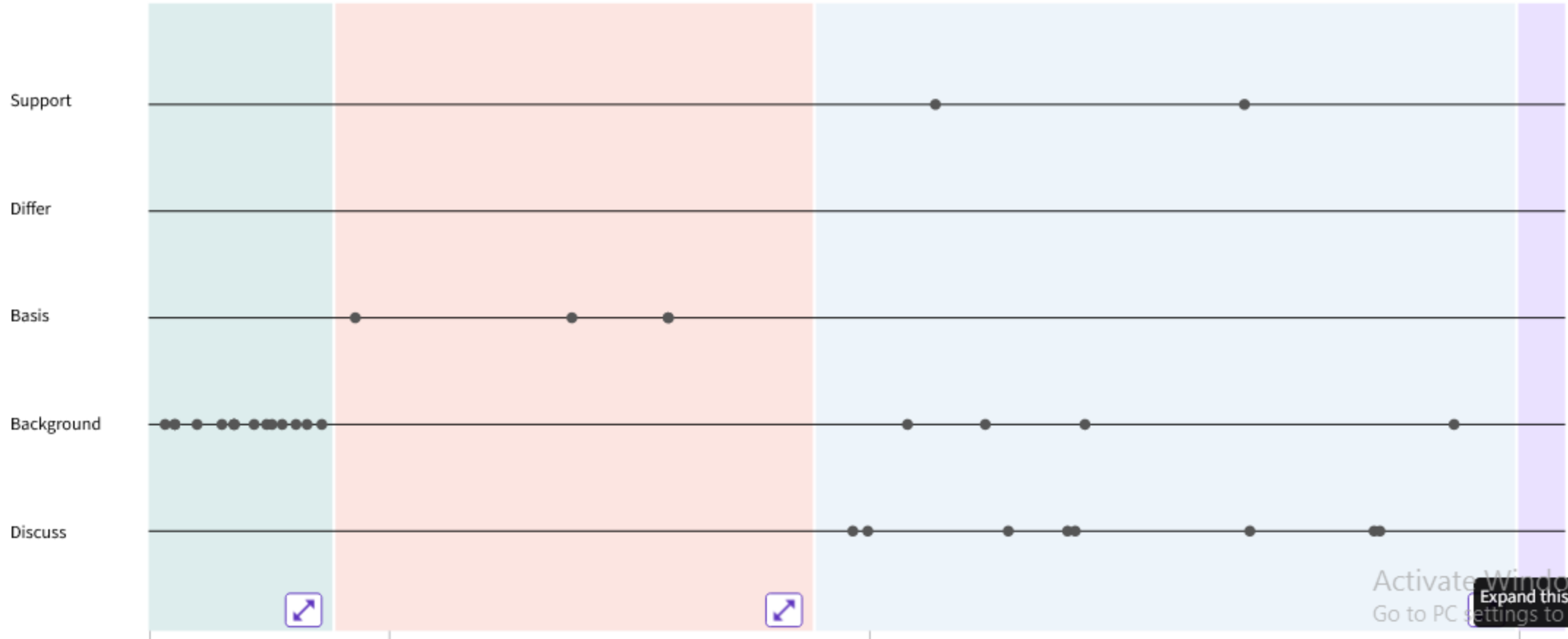


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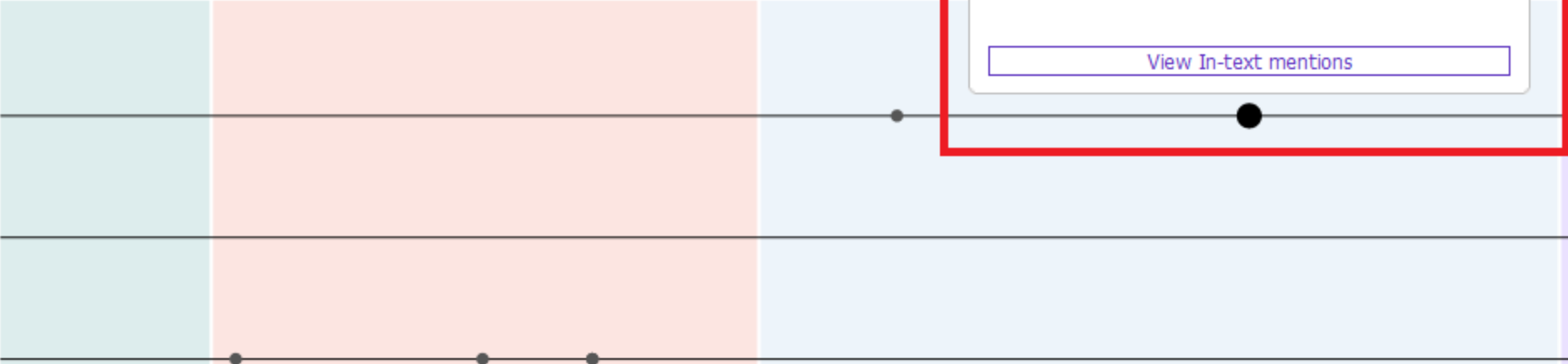
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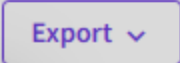
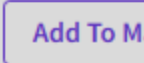
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Polycaprolactone nanofibers for the controlled release of tetracycline hydrochloride



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29 Polycaprolactone nanofibers for the controlled release of tetracycline hydrochloride
 Karuppuswamy, P; Venugopal, JR; (...); Ramakrishna, S
 Feb 15 2015 | MATERIALS LETTERS 141 , pp.180-186
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Polycaprolactone nanofibers for the controlled release of tetracycline hydrochloride

"The results of drug release were in good agreement with the results of hydrophilicity and degradation of scaffolds; raising in the amounts of CP increases the hydrophilicity and so the degradation rate leading to a faster drug release from the scaffolds.²⁹" [Full Text at Publisher](#)

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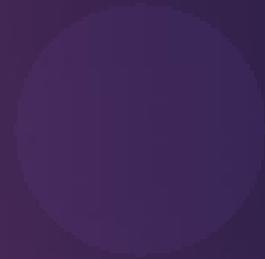
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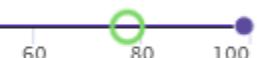
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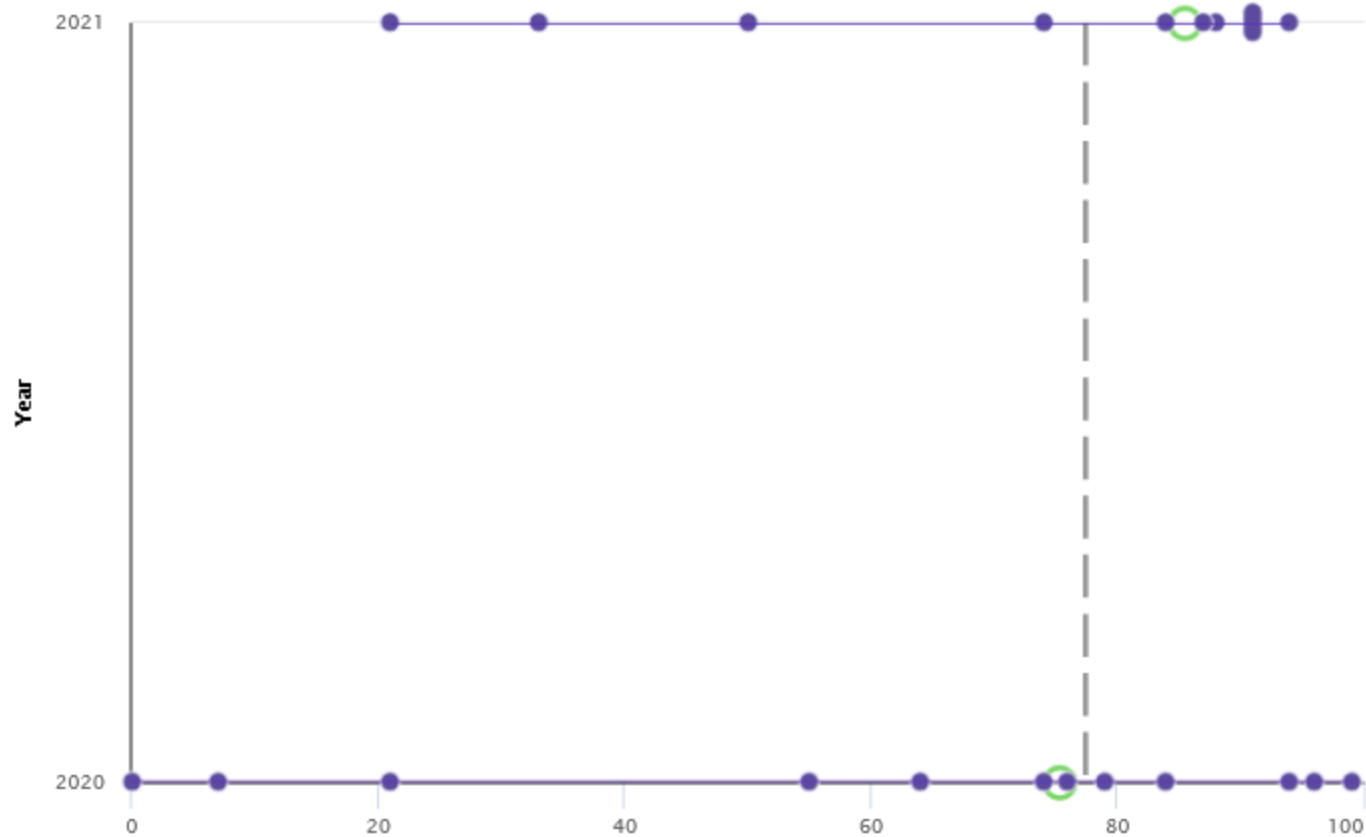
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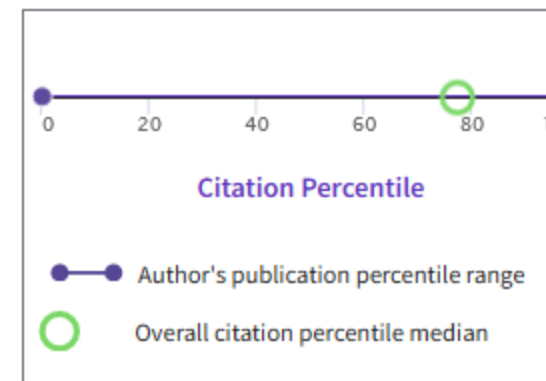


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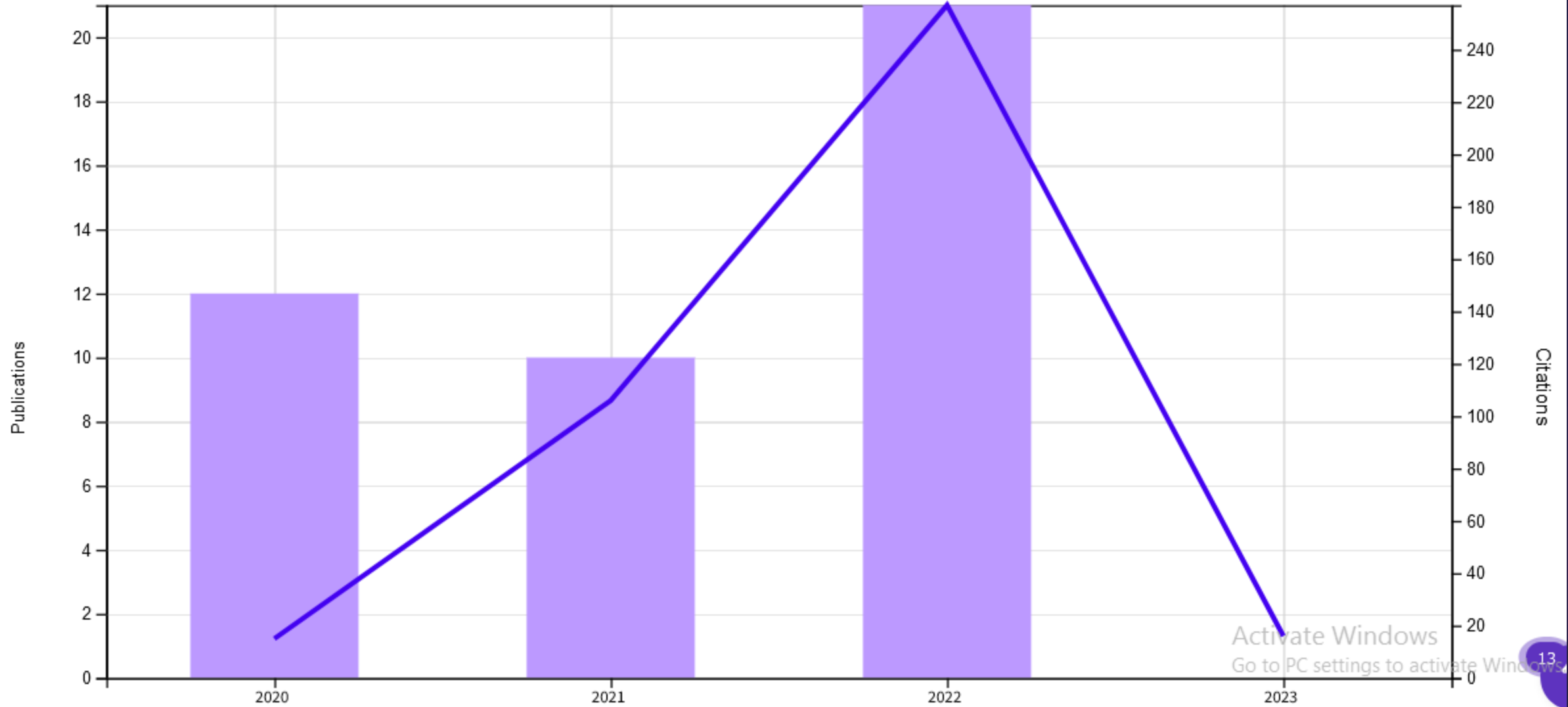
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