

Homepage

Check Out the New Homepage

- Streamlined top level menu for ease of browsing content
- Rotator display of new and highlighted content
- Persistent site search bar
- Content blocks emphasizing available content types

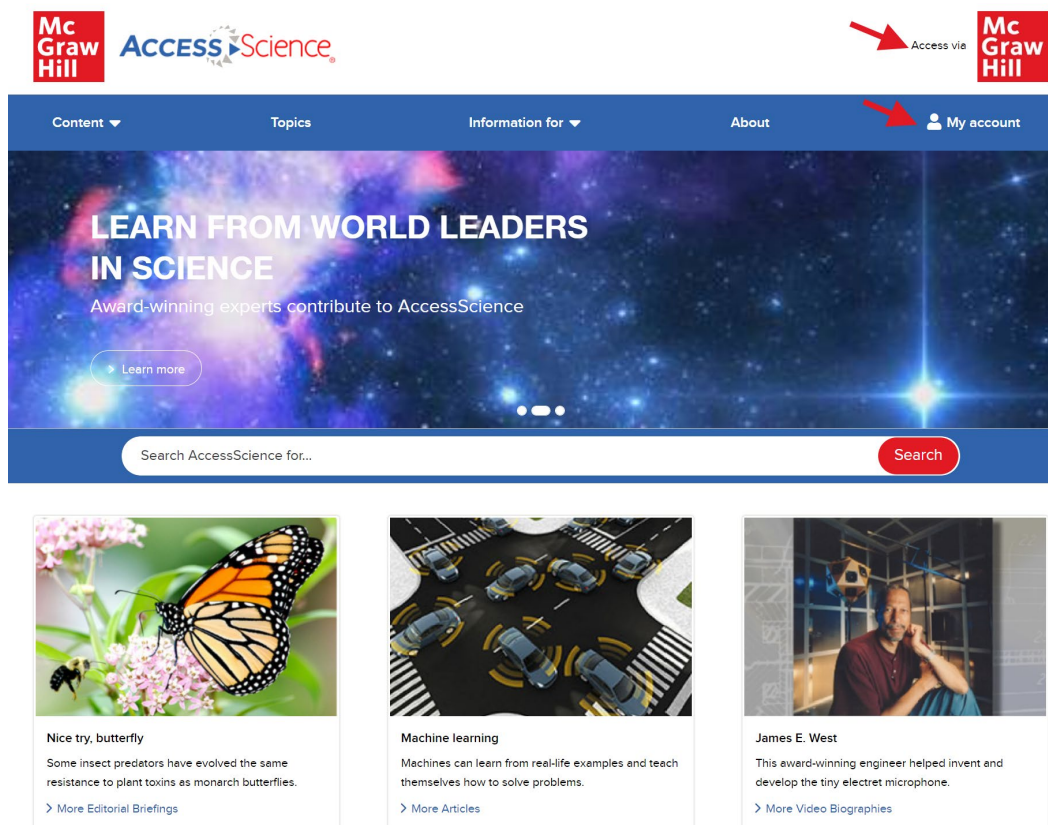
Access through your institution

AccessScience is available through institutional subscriptions. A message saying "Access via [Your Institution]" will appear in the top right corner of AccessScience if you have been properly authenticated and the site is recognizing your affiliation.

If you are not sure if your institution subscribes, or are not seeing the access message after authenticating, contact Customer Success for assistance.

My Account

Log in to your personal account, create a new account, or see content saved to your account using the "My Account" button in the site header. See the section on [Personal Accounts](#) for more on creating a personal account and available features.



Searching

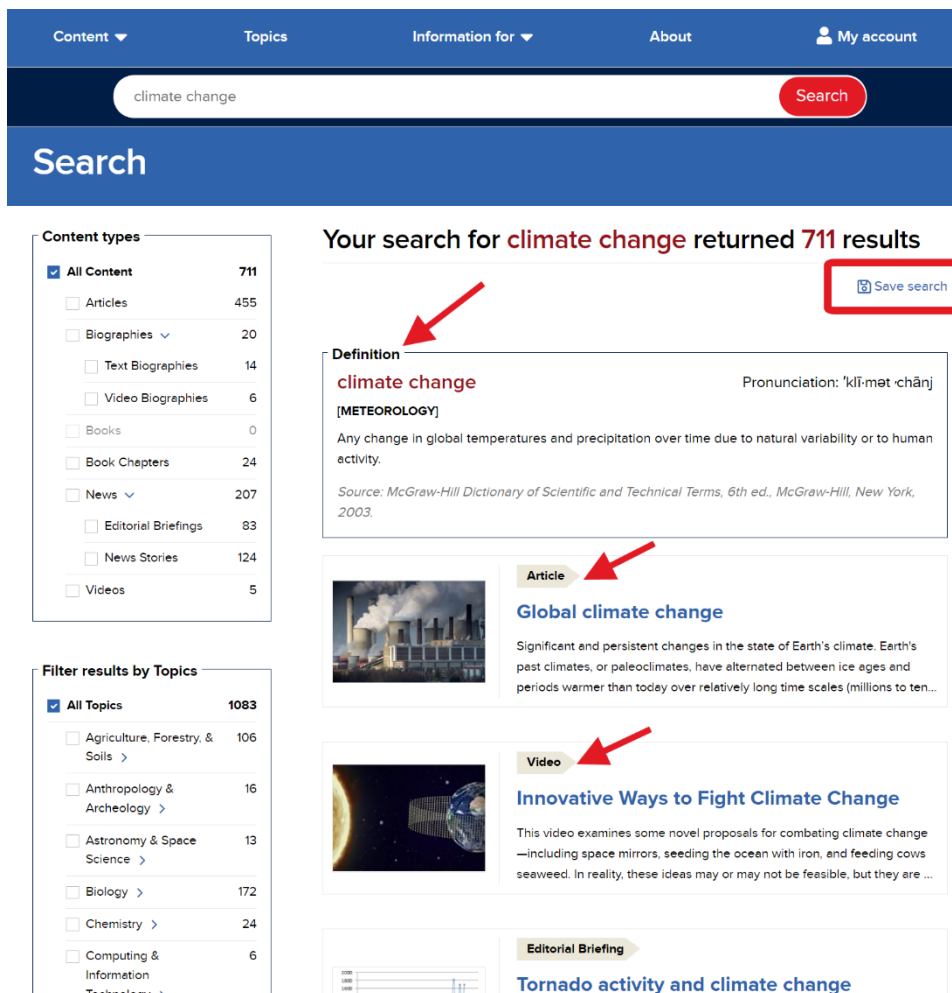
The general search bar is available in the site header from all AccessScience pages and can be used to search across all content on the site. Boolean search techniques, such as 'AND' 'OR' and 'NOT' are supported.

Search Results

Search results pages on AccessScience are organized by relevancy. A dictionary definition for the search term will appear at the top of the results list when available. Definitions are from the latest edition of the *McGraw-Hill Dictionary of Scientific and Technical Terms*.

Each result item will have a content type label, an image, and a brief description. Click on the item to view the full text.

The Save Search button is available at the top of any results page, allowing you to save the search to your personal account. There are also optional search alerts that can be activated to send an email if new items are added that match the search terms. For more on the personal accounts see the [Personal Account](#) section.



The screenshot shows the AccessScience search results page for the query "climate change". The page has a blue header with navigation links: Content, Topics, Information for, About, and My account. A search bar at the top contains the text "climate change" and a red "Search" button. Below the header, a large blue banner displays the word "Search".

On the left side, there are two filter panels. The "Content types" panel shows a list of content types with checkboxes and counts: All Content (711), Articles (455), Biographies (20), Text Biographies (14), Video Biographies (6), Books (0), Book Chapters (24), News (207), Editorial Briefings (83), News Stories (124), and Videos (5). The "Filter results by Topics" panel shows a list of topics with checkboxes and counts: All Topics (1083), Agriculture, Forestry, & Soils (106), Anthropology & Archeology (16), Astronomy & Space Science (13), Biology (172), Chemistry (24), and Computing & Information Technology (6).

The main content area displays the search results. At the top, it says "Your search for **climate change** returned 711 results". A red arrow points to a "Save search" button in the top right corner. Below this, the first result is a "Definition" for "climate change". The definition includes the term "climate change", its pronunciation "k'lī-mət -chānj", and a brief description: "Any change in global temperatures and precipitation over time due to natural variability or to human activity." The source is cited as "Source: McGraw-Hill Dictionary of Scientific and Technical Terms, 6th ed., McGraw-Hill, New York, 2003." Below the definition, there are three other results: an "Article" titled "Global climate change" with a red arrow pointing to it, a "Video" titled "Innovative Ways to Fight Climate Change" with a red arrow pointing to it, and an "Editorial Briefing" titled "Tornado activity and climate change".

Filtering

From the results page, there are filters available on the left to narrow down results by content type or topic. Use the checkboxes to select or remove filters. The parenthetical number shows how many results from the current results set are tagged to a specific filter.

Content types

☐ All Content	322
☐ Articles	131
☐ Biographies	29
☐ Text Biographies	26
☐ Video Biographies	3
☐ Books	1
☒ Book Chapters	143
☐ News	16
☐ Editorial Briefings	9
☐ News Stories	7
☐ Videos	2

Filter results by Topics

☐ All Topics	1083
☐ Agriculture, Forestry, & Soils	106
☐ Anthropology & Archeology	16
☐ Astronomy & Space Science	13
☐ Biology	172
☐ Chemistry	24
☐ Computing & Information Technology	6
☒ Earth Science	333
☒ Ecology & Environmental Science	203
☐ Engineering & Materials	76
☐ Food Science & Technology	15
☐ Forensic Science	2
☐ General Science Concepts	1
☐ Mathematics	0
☐ Medicine & Health Sciences	36
☐ Paleontology	57
☐ Physics	22
☐ Psychiatry & Psychology	1
☐ Scientific & Engineering Instruments	0

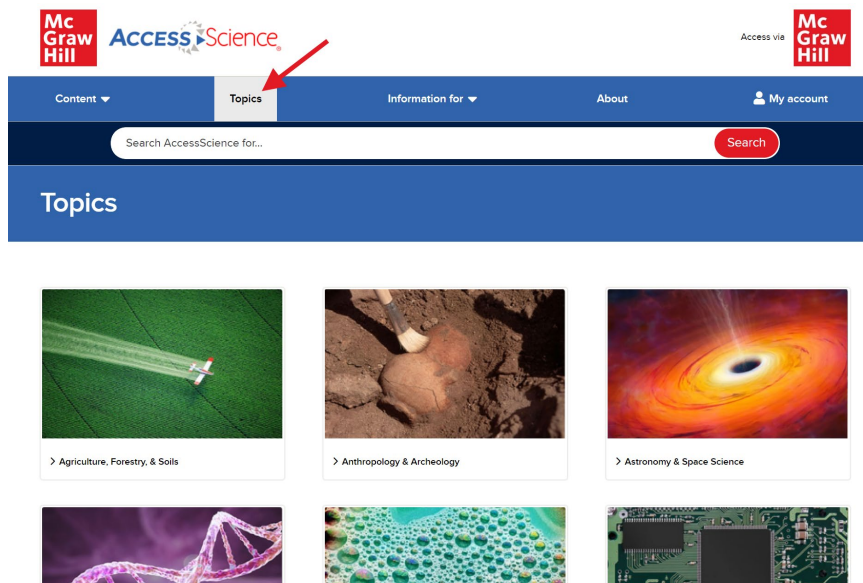
More About Search

The search engine operates by seeking matches with search terms from two distinct types of data pulled from the contents of AccessScience: a layer of semantic metadata associated with each article or other feature, and the exact matches of words or phrases in the text. Semantic matches are those based on the meaning of the search terms and the concepts they describe, allowing the user to find pertinent articles without having to search for all synonyms of a given search term. To supplement these semantic results, the search engine provides all articles and other types of content that contain exact matches to the search terms.

Browsing by Topic or Content Type

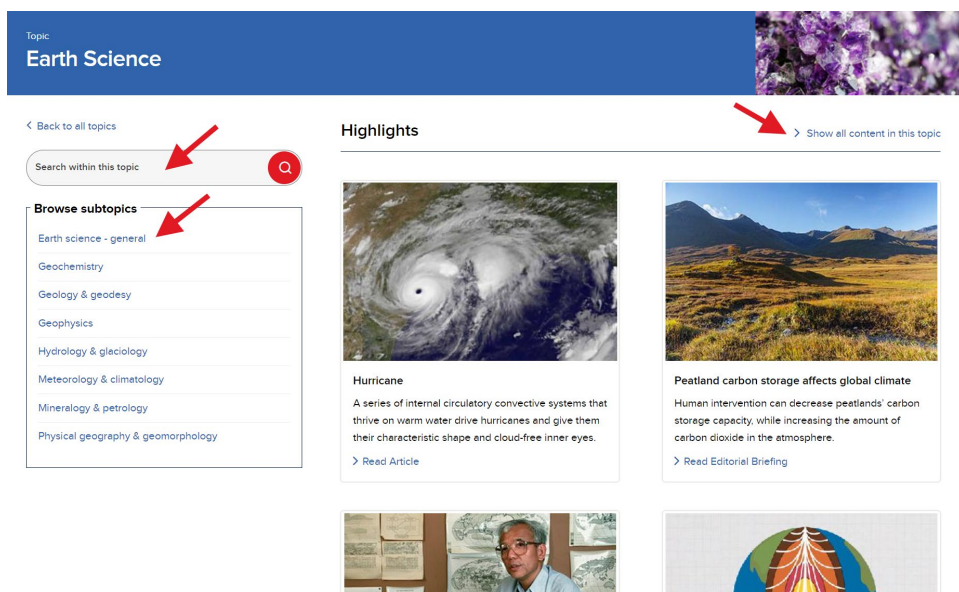
Browse by Topic

To browse by topic, select Topic from the top-level menu. This will show the topic browse page, with 18 major topic areas represented by an engaging image. Click on the image or topic name to view the individual browse page for that topic.



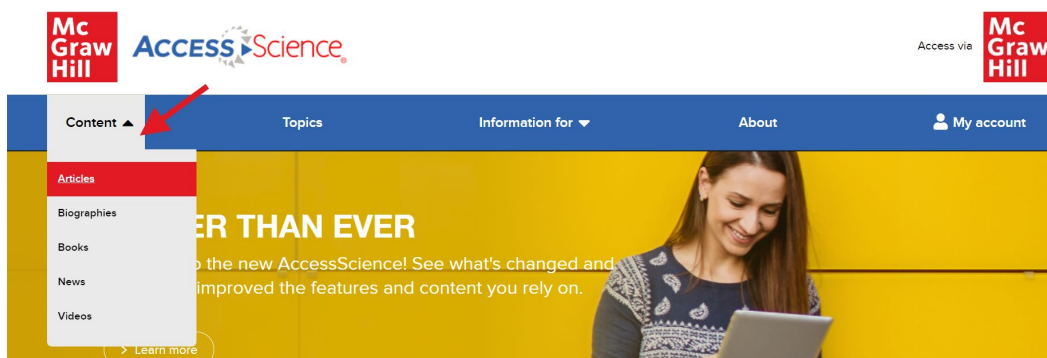
On the individual topic page, highlighted content for that topic will be displayed on the right. Click on the link below an item to open that content item.

To explore a topic further, use the left menu to browse available subtopics, enter search terms to Search within this topic, or select Show all content in this topic. Each of these options will lead to a results page featuring relevant content. See the section on [Searching](#) for more on results pages and filtering.



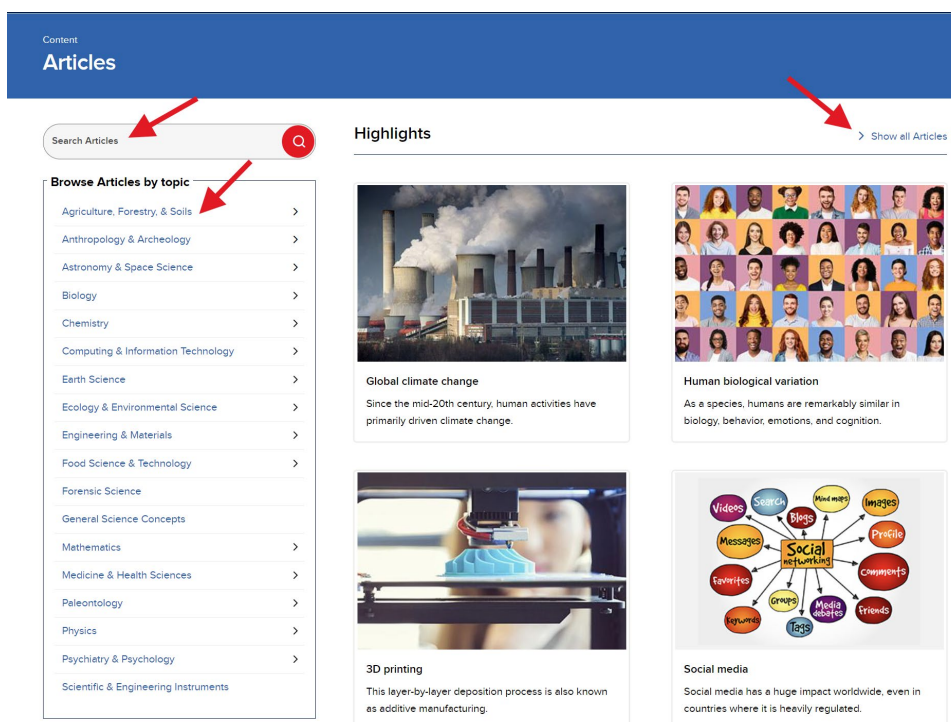
Browse by Content Type

To browse by content type, select Content from the top-level menu and choose from the available content types in the dropdown menu. The next sections of this guide describe the content types in more detail.



Selecting a content type will lead to a browse page for that content, featuring highlighted content items on the right. Click on the link below an item to open that content item.

To explore a content type further, use the left menu to browse available content by topic, enter search terms to Search within this content type, or select Show all. Each of these options will lead to a results page featuring relevant content. See the section on [Searching](#) for more on results pages and filtering.



Content Types

Articles

AccessScience Articles include updated source material from the last edition of the McGraw-Hill Encyclopedia of Science & Technology and previous McGraw-Hill Yearbooks of Science & Technology, including articles exclusive to AccessScience.

Features of articles include:

- Article metadata: expert authors and their affiliations and the date the article was last reviewed.
- Collapsible table of contents and tabs pulling out additional content within articles.
- Figures and graphs with the option to open in a new tab or share a direct link.
- Cross-references to related articles at the end of each paragraph in the article.
- Key Concepts highlighting major points students should be able to identify from the article.
- Self-Test questions to evaluate understanding of the content and encourage critical thinking.
- Related primary literature links to articles from reputable scientific journals to deepen research on a topic.

Article

Photosynthesis

Govindjee | Robert E. Blankenship | Gerald A. Berkowitz | Archie R. Portis, Jr. | R. J. Shopes

Last reviewed: March 2019

<https://doi.org/10.1036/1097-8542.511700>

Cite

Bookmark

Labels

Annotate

Share

Article

Figures & Tables

Primary Literature

Self Test

Table of Contents

Key Concepts

- Chlorophyll-containing organisms to produce carbohydrates and oxygen.
- Some bacteria conduct anoxygenic photosynthesis.

The synthesis of chemical compounds using light, especially the manufacture of organic compounds (primarily carbohydrates) from carbon dioxide and a hydrogen source (such as water), most often with simultaneous liberation of oxygen, by chlorophyll- or bacteriochlorophyll-containing cells. The term photosynthesis is used almost exclusively to designate one particularly important natural process: the use of light in the manufacture of organic compounds (primarily certain carbohydrates) from inorganic materials by chlorophyll- or bacteriochlorophyll-containing cells (Fig. 1). This process requires a supply of energy in the form of light because its products contain much more chemical energy than its raw materials. This is clearly shown by the liberation of energy in the reverse process, namely the combustion of organic material with oxygen, which takes place during respiration. *See also:* Carbohydrate; Chlorophyll; Energy metabolism; Plant respiration; Respiration

Fig. 1 A simplified diagram of a chloroplast is used to delineate the overall process of photosynthesis. Chloroplasts in the plant cells of leaves absorb light energy and convert it into chemical energy, which is used to synthesize carbohydrates (CH₂O) and liberate oxygen (O₂). (Copyright © McGraw-Hill Education)

Open in new tab

Share

Books

AccessScience Books include select McGraw Hill college-level science books and Schaum's Outlines available in full for students and teachers alike.

Features of books include:

- Collapsible table of contents and tabs pulling out additional content within chapters.
- Previous and next buttons to move through the chapters.
- Focus view to hide everything except the text for ease of reading.

Book

Harper's Illustrated Biochemistry

Victor W. Rodwell | David A. Bender | Kathleen M. Botham | Peter J. Kennelly | P. Anthony Weil

ISBN: 9781259837937 | Copyright © 2018 by McGraw-Hill. All rights reserved.

Cite | Bookmark | Labels | Annotate | Share | Summary PDF

Table of Contents | Description

- A Coauthors
- B Preface
- A SECTION I: Structures & Functions of Proteins & Enzymes
- 1. Biochemistry & Medicine

Related Articles

- Biochemistry
- Chemistry
- Nutrition

Show More

Related News

Book Chapter

2. Vector Analysis

Mahmood Nahvi | Joseph A. Edminister

Schaum's Outline of Electromagnetics

ISBN: 9781260120974 | Copyright © 2019 by McGraw Hill. All rights reserved.

Cite | Bookmark | Labels | Annotate | Share | Summary PDF

Chapter | Videos | Figures | Examples

Hide Table of Contents

- A Preface
- 1. The Subject of Electromagnetics
- 2. Vector Analysis
 - 2.1 Introduction
 - 2.2 Vector Notation

Focus view | < Previous | Next >

2. Vector Analysis

2.1. Introduction

In electromagnetics, vectors are used extensively as the main tool of analysis. They were introduced briefly in Section 1.5, along with some vector operations in the Cartesian coordinate system. This chapter expands the scope of vector algebra to a level needed throughout the rest of the book. It also introduces the cylindrical and spherical coordinate systems, as all three coordinate systems are used in electromagnetics. As the notation

Related Articles

- Quaternions
- Nonrelativistic quantum theory
- Lagrange's equations

Show More

Related News

- New geologic map of Mars
- Asian hornhorned tick is an

News

AccessScience News includes Editorial Briefings, topical overviews of newsworthy subjects, designed to engage and inform, and News Stories, timely stories from Science News with links to relevant AccessScience content.

Biographies

AccessScience Biographies include life histories of well-known scientists from the Hutchinson Dictionary of Scientific Biography, plus video biographies of Franklin Institute Award winners

Videos/Animations

AccessScience Videos/Animations include engaging multimedia selections that bring complex concepts to life. Videos all have closed captioning available and some videos can be downloaded for offline use.

Editorial Briefing

Faster-charging batteries for electric vehicles

AccessScience Editors

Last reviewed: January 2021 <https://doi.org/10.1036/1097-9542.BR0125211>

Cite

Bookmark

Labels

Annotate

Share

Editorial Briefing

Primary Literature

Faster-charging batteries for electric vehicles

Focus view

Many new-model electric vehicles (EVs) now have s

Consequently, range anxiety—the fear of running o

charging station—is becoming less problematic. Ba

as eight hours to recharge an EV battery to its full c

number of new and existing battery suppliers are r

accept a full charge in 10 to 15 minutes. See also: B



Related Articles

Battery

Video

All About Gluten

Cite

Bookmark

Labels

Annotate

Share

Video

Is gluten good for you, or is gluten bad for you? This video breaks down the chemistry and science behind this controversial food ingredient.

Credit: Reactions/American Chemical Society



See also: Wheat; Celiac disease; Gastrointestinal tract disorders; Food allergy; Allergy; Food; Yeast; Cereal; Protein; Amino acid; Chemical bond

Related Articles

Wheat

Gastrointestinal tract disorders

Celiac disease

Show More

Related News

Why people with celiac disease suffer so soon after eating gluten

Common virus may be celiac disease culprit

Kids with food allergies are twice as likely to have autism

Show More

Content Tools

Content tools are available at the top of any content page. Some of the content tools require the creation of a personal account, which is described in the [Personal Account](#) section.

- Cite provides a citation for the content item, available in several styles or for download as an RIS file.
- Bookmark saves the item to your list of bookmarks in your personal account.
- Label saves the item to a folder within your personal account.
- Annotate allows highlighting and commenting using the Hypothesis browser plug. See the next section on [Annotations](#) for more details.
- Share provides a direct link to the content and the option to share that direct link via social media
- Summary PDF downloads a PDF copy of the content item for offline use.

Article
Global climate change

Rachel Licker
Last reviewed: October 2020
<https://doi.org/10.1036/1097-8542.757541>

Cite Bookmark Labels Annotate Share

Cite this Article

Choose a citation format to copy and paste:

MLA (8th ed.)	Licker, Rachel. "Global climate change." <i>AccessScience</i> , McGraw Hill, Oct. 2020.
APA (7th ed.)	Licker, R. (2020, October). Global climate change. <i>AccessScience</i> . Retrieved September 28, 2022, from https://doi.org/10.1036/1097-8542.757541 . https://www.accessscience.com/content/article/a757541
Chicago (17th ed.)	AccessScience, s.v. "Global climate change," by Rachel Licker; last reviewed October 2020. https://www.accessscience.com/content/article/a757541
CSE (8th ed.)	Licker, R. 2020. Global climate change. In: <i>AccessScience</i> . McGraw Hill. doi:10.1036/1097-8542.757541. [accessed 2022 Sep 28]. https://www.accessscience.com/content/article/a757541

Download as...

RIS ?

Share this content

To share with users who are connected to your same network, click <Link> below to copy the page URL.

To share with remote users, click <Proxy Link> below to copy the page URL with an added prefix for your institution's proxy server that will prompt users to log in with their online credentials to gain access to the content.

To share in a Learning Management System (LMS).

1. Contact customerservice@mheeducation.com to confirm that your LMS has been correctly set up in our Subscription Management System (be sure to provide the name of your institution and the link for your LMS course)
2. Click <Link> button below to copy the page URL and paste it into your LMS.

Link Proxy Link

Share on social media

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Related Content

All content pages also include a related content sidebar on the right. This section highlights additional content that is relevant to the content item currently being viewed. The related content is separated by content type, with each content type box having the option to expand and Show More suggestions.

At the bottom of the related content list is a section for Topics which shows the site topics that are tagged to the content item being viewed. These topics are linked so you can launch a search and see all other content on the site tagged to that specific topic.

Article Figures & Tables Primary Literature Self Test

CRISPR/Cas9 gene editing [Focus view](#)

Key Concepts

- CRISPR/Cas9 gene editing is a technique that allows precise targeting of specific stretches of genetic code and editing of DNA at designated locations.
- CRISPR stands for clustered regularly interspaced short palindromic repeat.
- The cas9 gene encodes a DNA-cutting enzyme, whereas the CRISPR gene encodes many RNA cofactors on the Cas9 enzyme.
- The CRISPR/Cas9 system has been used to engineer the genomes of many different organisms; the system is derived from naturally occurring components of a common prokaryotic immune system.
- The CRISPR/Cas9 system is being developed to correct genetic errors, which could facilitate gene therapies for patients with genetic diseases.

[Hide](#)

A genome-engineering technique that allows precise targeting of specific stretches of genetic code and editing of DNA at designated locations. The CRISPR/Cas9 system has been used as a general tool to engineer the genomes of many different organisms; the system is derived from naturally occurring components of a common prokaryotic immune system. Clustered regularly interspaced short palindromic repeats (CRISPRs) and cas9 are genes found in Bacteria and Archaea, and they mediate immunity in these species (Fig. 1). The cas9 gene

Related Articles

- Nobel Prizes for 2020
- Restriction enzyme
- Genetically modified organism (GMO)

[Show More](#)

Related News

- Expanded range for CRISPR gene editing
- Gene-editing tool CRISPR wins the chemistry Nobel

[Show More](#)

Related Book Chapters

- Toxic Responses of the Immune System
- The Flow of Genetic Information

[Show More](#)

Topics

- Biomedical engineering & therapy
- Biology
- Genetics

Annotations

For annotating content on AccessScience, we've teamed up with [Hypothesis](#), an open-source annotation tool that can be used across any digital resource. Create a free Hypothesis account to save and access annotations in AccessScience and across any other websites you use.

To annotate in AccessScience:

- Click the Annotate button from any content page to open the Hypothesis toolbar.
- Choose a group to share annotations with or save to your personal account.
- Select text quickly highlight or add an annotation.
- Categorize your annotations with tags, edit or delete your annotations, or reply to annotations.

McGraw Hill Search AccessScience for...

Curtis D. Klaassen | John B. Watkins, III

Casarett & Doull's Essentials of Toxicology

ISBN: 9781260452297 | Copyright © 2022 by McGraw Hill. All rights reserved.

[Cite](#) [Bookmark](#) [Labels](#) [Annotate](#) [Share](#)

Chapter Figures Tables

[Focus view](#) [Previous](#)

3. Mechanisms of Toxicity

Annotations Page Notes

ASWeinheimer 18 hrs ago

(1) delivery of the toxicant to its target; (2) interactions between the toxicant and its target or the microenvironment; (3) progression to cellular dysfunction; and (4) inappropriate repair or adaptation

Four-step process of toxicity- which step has the most effect on the subsequent cell damage?

[Less](#)

[Annotate](#) [Delete](#) [Reply](#) [Share](#)

The screenshot shows the AccessScience website. On the left, a document titled "STEP 1: DELIVERY TO THE TARGET" is displayed. A diagram illustrates the process of a toxicant entering an exposure site (Skin, GI tract, respiratory tract, injection/bite site, placenta) and then being absorbed, distributed, and eliminated. The diagram shows a central vertical bar labeled "Toxicant" with arrows pointing to "Absorption", "Distribution toward target", and "Reabsorption" on the left, and "Presystemic elimination", "Distribution away from target", and "Excretion" on the right. On the right side of the document, a Hypothesis annotation sidebar is open. The sidebar shows the user "ASWeinheimer" and the group "Biochem". A red box highlights the "Annotate" and "Highlight" buttons. Another red box highlights the "Post to Biochem" button in the sidebar. A red arrow points from the "Post to Biochem" button to the "Biochem" group name in the sidebar.

To manage annotations in your Hypothesis account:

- Click on your account to see all your annotations across different resources or groups.
- View annotation content and link to visit in context.
- Display current group members or invite new members with the shareable link.
- Get additional help on using Hypothesis from their FAQs and tutorials.

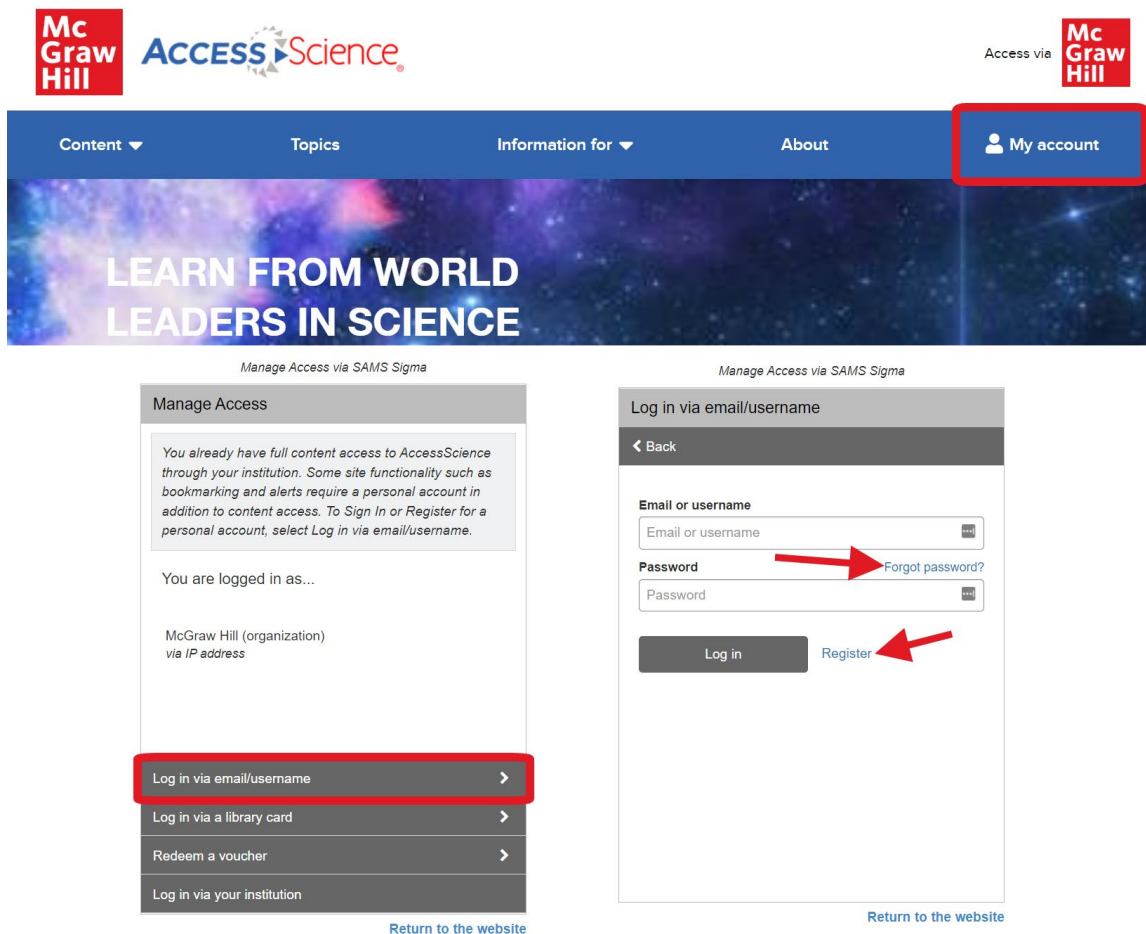
The screenshot shows the Hypothesis account page for the "Energy Systems Course" group. The page displays a list of annotations. The first annotation is titled "Energy storage" and is from the website "www.accessscience.com". The second annotation is titled "Solar energy" and is also from "www.accessscience.com". The annotation content for "Solar energy" is visible, showing a paragraph about heat transfer fluids. A red box highlights the "Visit annotations in context" button. Another red box highlights the "Members 1" section, which shows the user "ASWeinheimer" as the creator. A red arrow points from the "Visit annotations in context" button to the "Members 1" section. The page also shows a search bar at the top with the text "group: Energy Systems Course" and a sidebar on the right with links to "Edit group" and "Leave this group".

Personal Account

AccessScience has several features which are available only after signing up for a free personal account. Personal accounts are an optional feature and are not required to view or use any of the content on the site. Personal accounts do not replace authentication via your institution; you must first be logged in through your institution to use AccessScience.

To register for a free personal account:

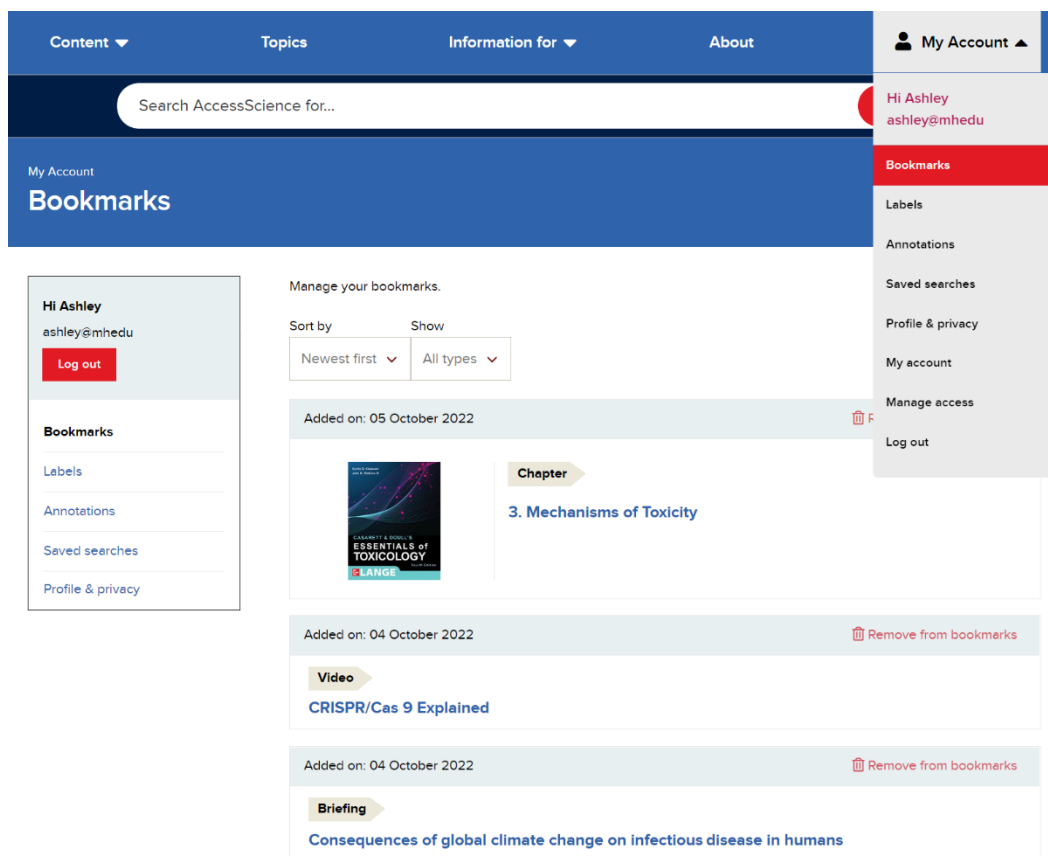
- Click on My Account in the top menu to open the Manage Access window, where you will see your subscribing organization information.
- Select log in via email/username.
- Register for an account by entering the required information.
- You can reset your password if needed using the “Forgot password?” link on the login screen.



The image displays two screenshots of the AccessScience website interface. The top screenshot shows the main navigation bar with the 'My account' link highlighted by a red box. Below this, the 'Manage Access' window is shown, featuring a message about content access and a list of login options. The 'Log in via email/username' option is highlighted with a red box. The bottom screenshot shows the 'Log in via email/username' form, which includes fields for 'Email or username' and 'Password'. A red arrow points to the 'Forgot password?' link next to the password field. Another red arrow points to the 'Register' link below the 'Log in' button. Both screenshots include a 'Return to the website' link at the bottom.

Personal Account features include:

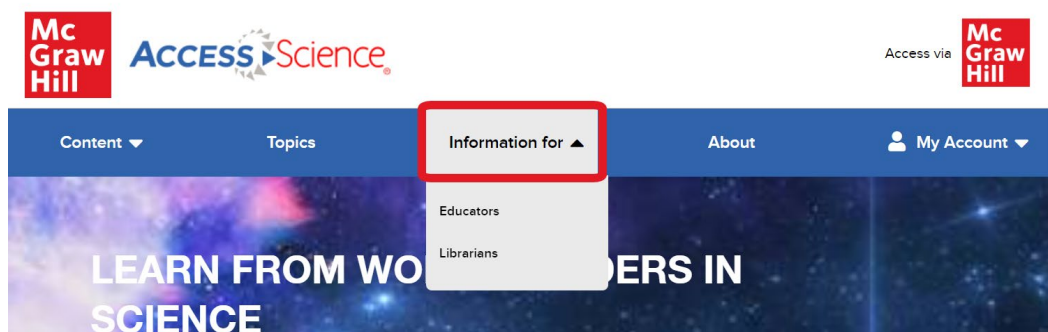
- Add bookmarks or labels to content to organize and easily retrieve content.
- Save searches and set up email alerts for new content that matches your search terms.
- Select your interests to receive updates when new content is added in those areas.



The screenshot shows the 'My Account' page on the AccessScience website. The top navigation bar includes 'Content', 'Topics', 'Information for', and 'About'. The 'My Account' dropdown menu is open, showing options like 'Bookmarks', 'Labels', 'Annotations', 'Saved searches', 'Profile & privacy', 'My account', 'Manage access', and 'Log out'. The 'Bookmarks' section displays a list of saved items, including a chapter '3. Mechanisms of Toxicity' and a video 'CRISPR/Cas 9 Explained'.

Support

The Information For option from the top-level menu provides additional resources for Educators and Librarians.



The screenshot shows the top navigation bar of the AccessScience website. The 'Information for' dropdown menu is open, showing options for 'Educators' and 'Librarians'. The background features a space-themed image with the text 'LEARN FROM WORKERS IN SCIENCE'.

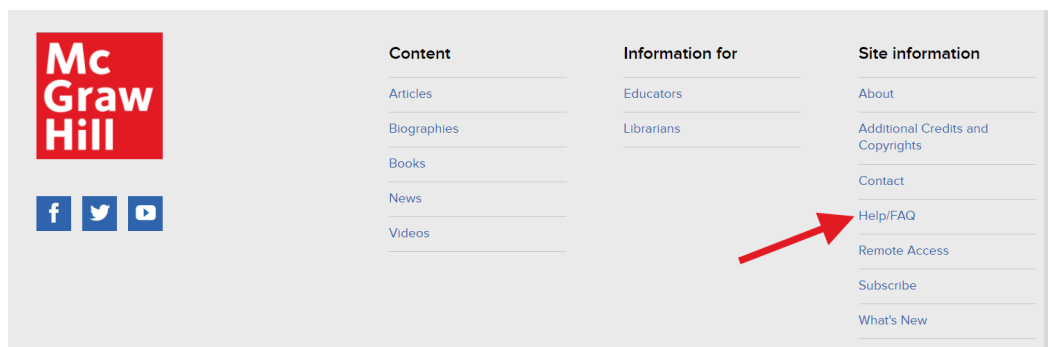
The Educators page includes:

- Link to a document containing answers to the Self-Test article questions
- Guide to using AccessScience in distance learning
- Recordings of author-led topical webinars

The Librarians page includes:

- Information on setting up Proxy Server access
- Instructions for accessing the SAMS Sigma admin portal for usage statistics and account information
- MARC records
- Site accessibility information
- Promotional materials
- User guides and video tutorials
- Information on upcoming trainings and recordings of previous training sessions and topical webinars

There is also a Help/FAQ page linked in the site footer which contains additional information on using the site and common issues.



Contact Us

For further questions and help, please email **Customer Success** at **McGraw Hill** at customersuccess@mheducation.com.