## Chemical Information

**BCHM281 – 2018**

### Chemical Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Symbol</th>
<th>Atomic Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>C</td>
<td>6</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>H</td>
<td>1</td>
</tr>
<tr>
<td>Oxygen</td>
<td>O</td>
<td>8</td>
</tr>
</tbody>
</table>

### Molecular Formulas

- **CH₅O₂**

- **CH₃**

- **O₂**
Reports and Quizzes

Chemistry of Milk Report

Write a letter describing your analysis results to the UCDilk company, informing them whether they have the correct nutritional information displayed on their bottles. You will need to use the class set of results, and include some statistical analysis of the results. Include in your report a brief statement as to what errors might have affected your results.

This must be no longer than ONE page, and is due by 5pm on Friday 3 August. Submit your report using the assignment link below.

NMR Spectroscopy Quiz

This Quiz is to be completed on Learn, due 5pm Friday 24 August.

Library Quiz

This Quiz is to be completed on Learn, due 5pm Friday 28 September.
Contact me

- Email
- Meet
- Chat

Contact:
Central Library, Level 5
Mon-Fri, 9am-5pm
Find reliable sources
- Articles
  - Citation counts
- References
- Review articles
- Chemical data, structures, enzyme’s EC numbers ...
- Proper referencing (ACS citation style)
First, though

How is research information created?
How scientists share research

- Write it down and e-contact peers
- Give talks at conferences
- Write in professional newsletters
- Publish independently – via a publisher
- Gather articles about the same subject and send out a journal
Journals

- “Magazines” for scientists
- Narrow subject focus
- New issues without end, often regular (quarterly, monthly etc.)
- Each issue has articles by various authors
Peer review

- Article sent to **peers** = scientists in the same field
- Peers check for
  - Accuracy
  - Clarity
  - Reproducibility
- Author makes corrections and improvements
- Publication
Databases

- Scopus
- SciFinder
- ChemSpider
- GOLD FFX
- PubChem
- ScienceDirect
- Web of Science
- Google Scholar
- BRENDa

- By publisher vs by subject
- Full-text vs citation only
- Articles vs data
- Precision vs usability
- Pay-for vs free
- No single one has it all!
So where to start?

https://canterbury.libguides.com/bchm
Scopus

journal articles

review articles

links to full text (if we have it)

Who has cited whom
Nailing down an article!

- Authors
- Title of the paper
- Where it was published – Journal name
- Year published
- Volume
- Issue (probably unnecessary)
- Page numbers
EC numbers

reactions

organisms

inhibitors

substrates

properties

references
formula
weight
properties
structure drawing
links to some articles/patents
and much more data...
(2)

ChemSpider
Search and share chemistry

Use our editor to draw your structure

Ketcher  Elemental  Accelrys JDraw

[Chemical structure diagram]

A  H  C  N  O  S  F  P  Cl  Br  I

[Chemical structure diagram]
Find the full reference for the paper

a) By Steven Gieseg about macrophages
In 2009 Nathan Henderson published a paper on photoactivatable green fluorescent protein *(Nathan not 1st name)*

a) What journal was it published in?  
b) Name one of the co-authors  
c) How many references were there in the paper?  
d) How many times has that paper been cited by *Scopus* and *Google Scholar*?
Q. 3-like. Example

For the term below, find a **review article** that was published in the last 12 years

a) Bioavailability of heavy metals

Provide a full reference for the review that you found.
For the enzyme glucose isomerase provide the following

i. A reference to a reliable source of information about it

ii. The EC number of the enzyme

iii. The reaction catalysed by this enzyme
(Provide full structures using a drawing package)
Q. 5-like. Example

Find the full name and an inhibitor (name and structure) for the enzyme below:

a) EC 3.3.1.2
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali, M.; Gual, A.; Ebeling, G.; Du...</td>
<td>2014</td>
<td>Ruthenium-Catalyzed Hydroformylation of Alkenes by usi...</td>
</tr>
<tr>
<td>Ali, M.; Gual, A.; Ebeling, G.; Du...</td>
<td>2016</td>
<td>Carbon Dioxide Transformation in Imidazolium Salts: Hydr...</td>
</tr>
<tr>
<td>Allan, J. R.; Milburn, G. H. W.; R...</td>
<td>1991</td>
<td>The cobalt(II), nickel(II) and copper(II) complexes of 4-(2-a...</td>
</tr>
<tr>
<td>Ambrogio, I.; Cacchi, S.; Fabrizi...</td>
<td>2006</td>
<td>Palladium-catalyzed synthesis of 2-(aminomethyl)indoles ...</td>
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<tr>
<td>Aryal, Rupak; Vigneswaran, Sar...</td>
<td>2010</td>
<td>Urban stormwater quality and treatment</td>
</tr>
<tr>
<td>Balzani, V.; Juris, A.; Venturi, M....</td>
<td>1996</td>
<td>Luminescent and redox-active polynuclear transition meta...</td>
</tr>
<tr>
<td>Bandar, Jeffrey S.; Lambert, Tris...</td>
<td>2012</td>
<td>Enantioselective Bronsted Base Catalysis with Chiral Cyclo...</td>
</tr>
<tr>
<td>Bandar, Jeffrey S.; Lambert, Tris...</td>
<td>2013</td>
<td>Aminocyclopentenium ions: synthesis, properties, and ap...</td>
</tr>
<tr>
<td>Bandar, Jeffrey S.; Tanaset, Ano...</td>
<td>2015</td>
<td>Phase-Transfer and Other Types of Catalysis with Cyclopr...</td>
</tr>
<tr>
<td>Battaglin, W. A.; Smalling, K. L.;...</td>
<td>2016</td>
<td>Potential interactions among disease, pesticides, water qu...</td>
</tr>
<tr>
<td>Berthod, M.; Saluzzo, C.; Migna...</td>
<td>2004</td>
<td>4,4’ and 5,5’-DiamBINAP as a hydrosoluble chiral ligand: ...</td>
</tr>
<tr>
<td>Bandi, Babu; Gopinath, B...</td>
<td>2017</td>
<td>Effects of Alkoxides inclusion on the structural function...</td>
</tr>
</tbody>
</table>
Reliable sources for articles  ➔ peer-reviewed journals
  - SciFinder, Scopus, Google Scholar

Specialist databases
  - BRENDA – enzymes and EC numbers
  - ChemSpider/ChemSketch – structure, properties, drawing molecules

Read the screen!
  - Author field
  - Refining document type to “Review” for review articles