

Does *easy access* translate to *easy papers*?: Teaching and doing research in an increasingly information-rich environment



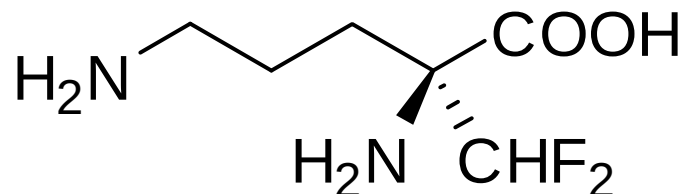
Erick Strauss
Stellenbosch University

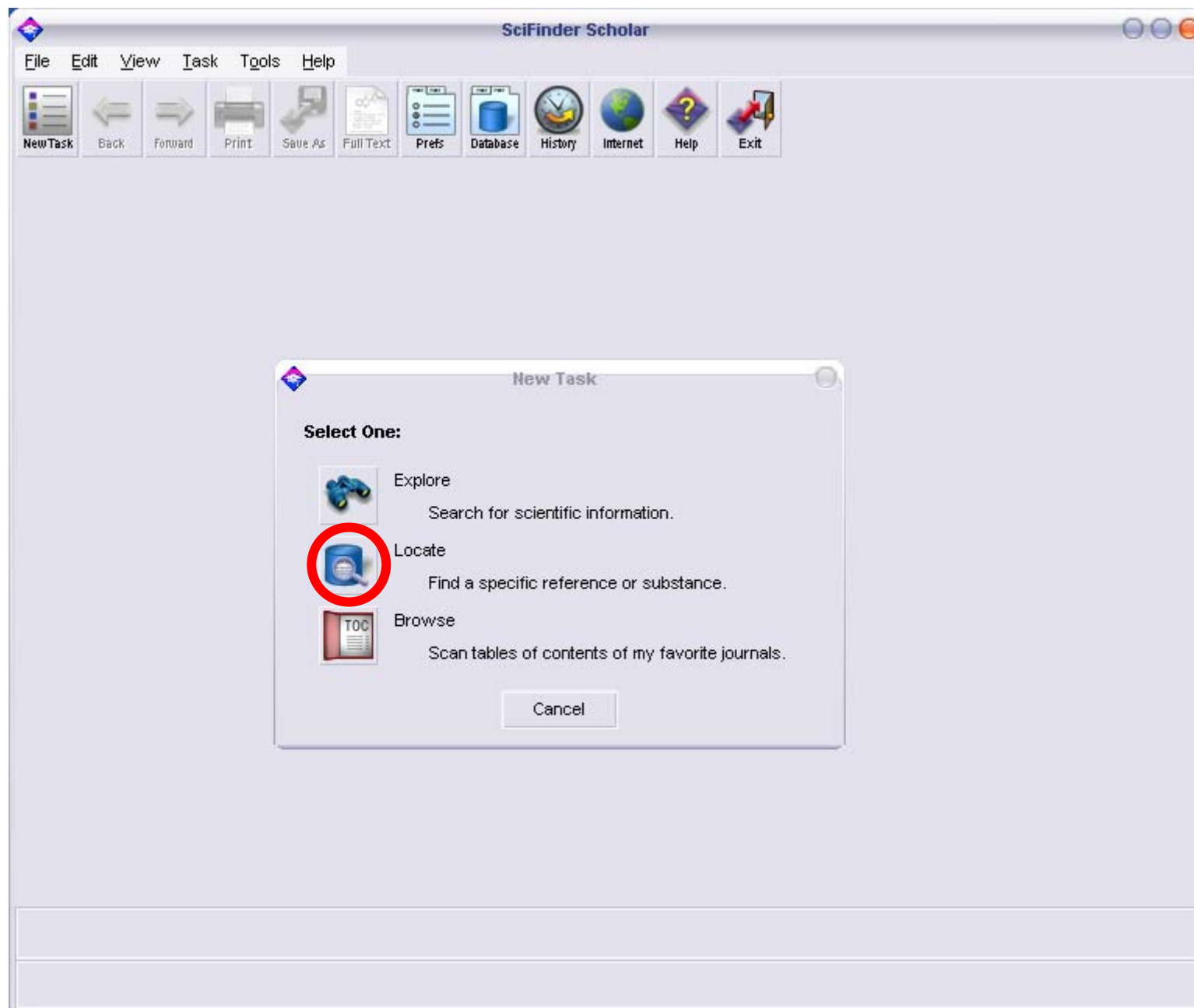
Online *databases*:
Easy access = easy papers?

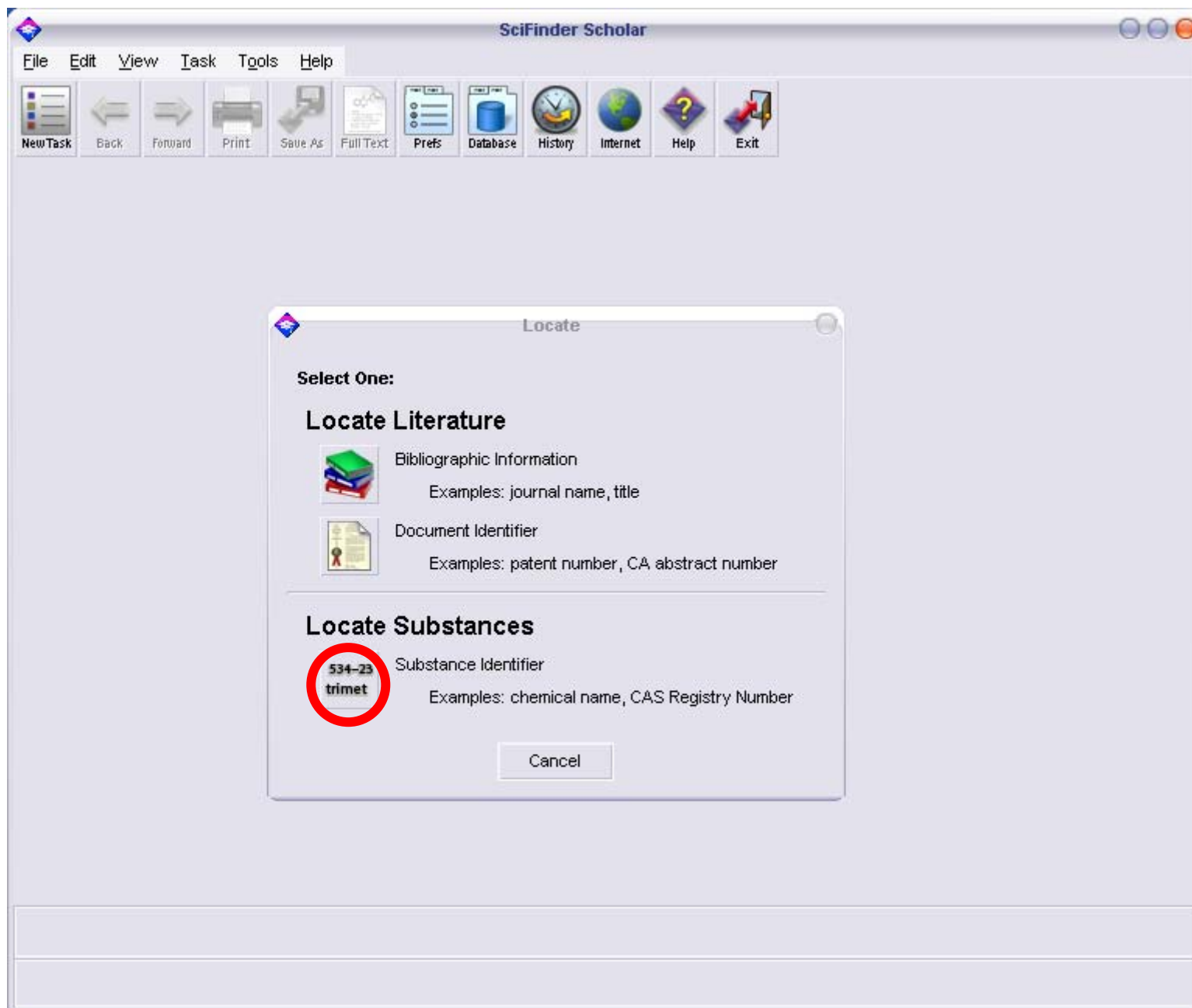
The case of SciFinder Scholar (CAS)

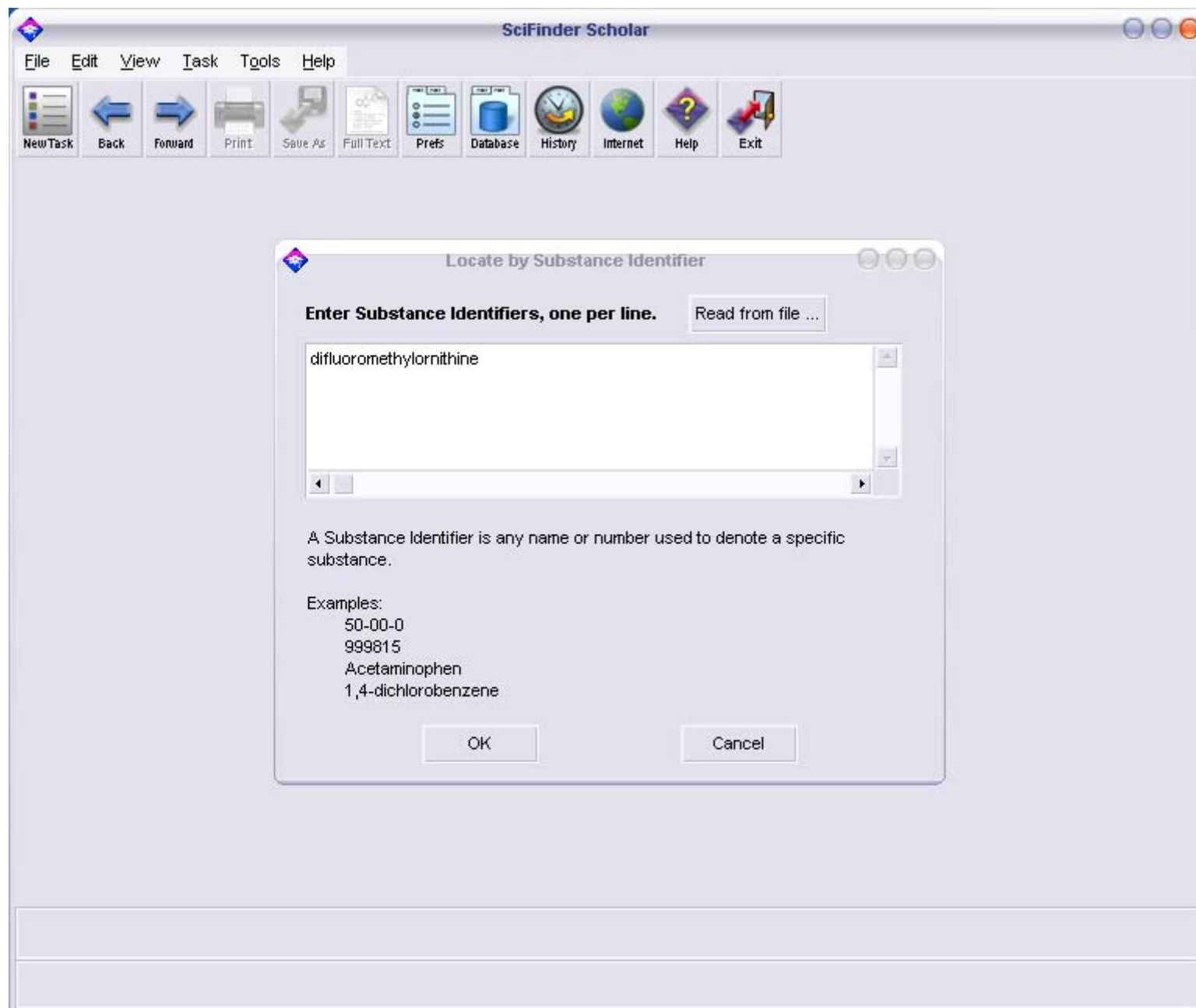
Searching for data on chemical compounds

- Chemical compounds can be identified in a multitude of ways:
 - Names (common, trade, standardized)
 - Registry numbers (eg. CAS)
 - Structures (with and without stereochemistry)
- Difluoromethylornithine (DFMO or eflornithine)







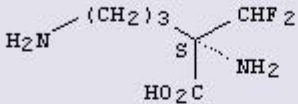


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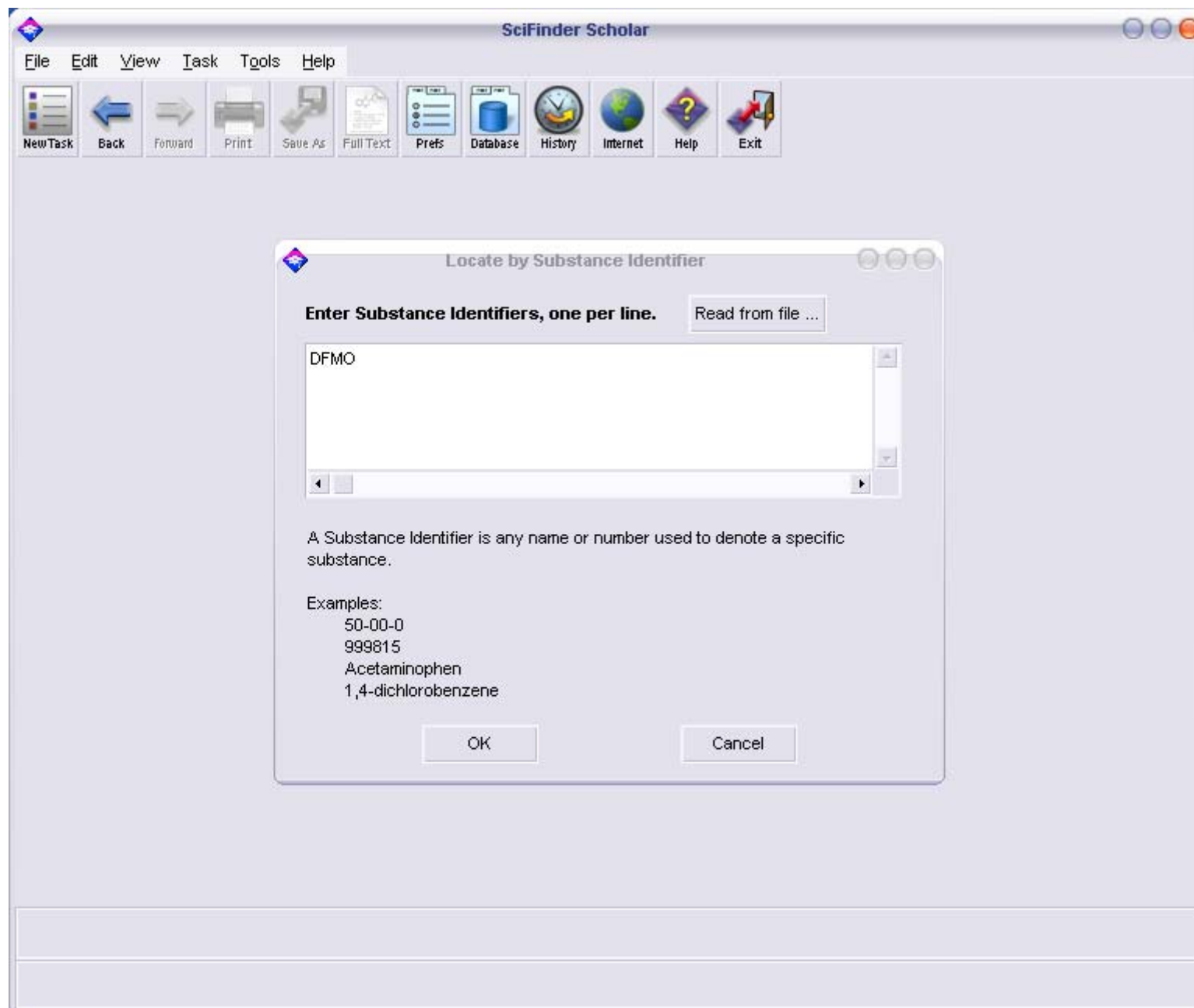
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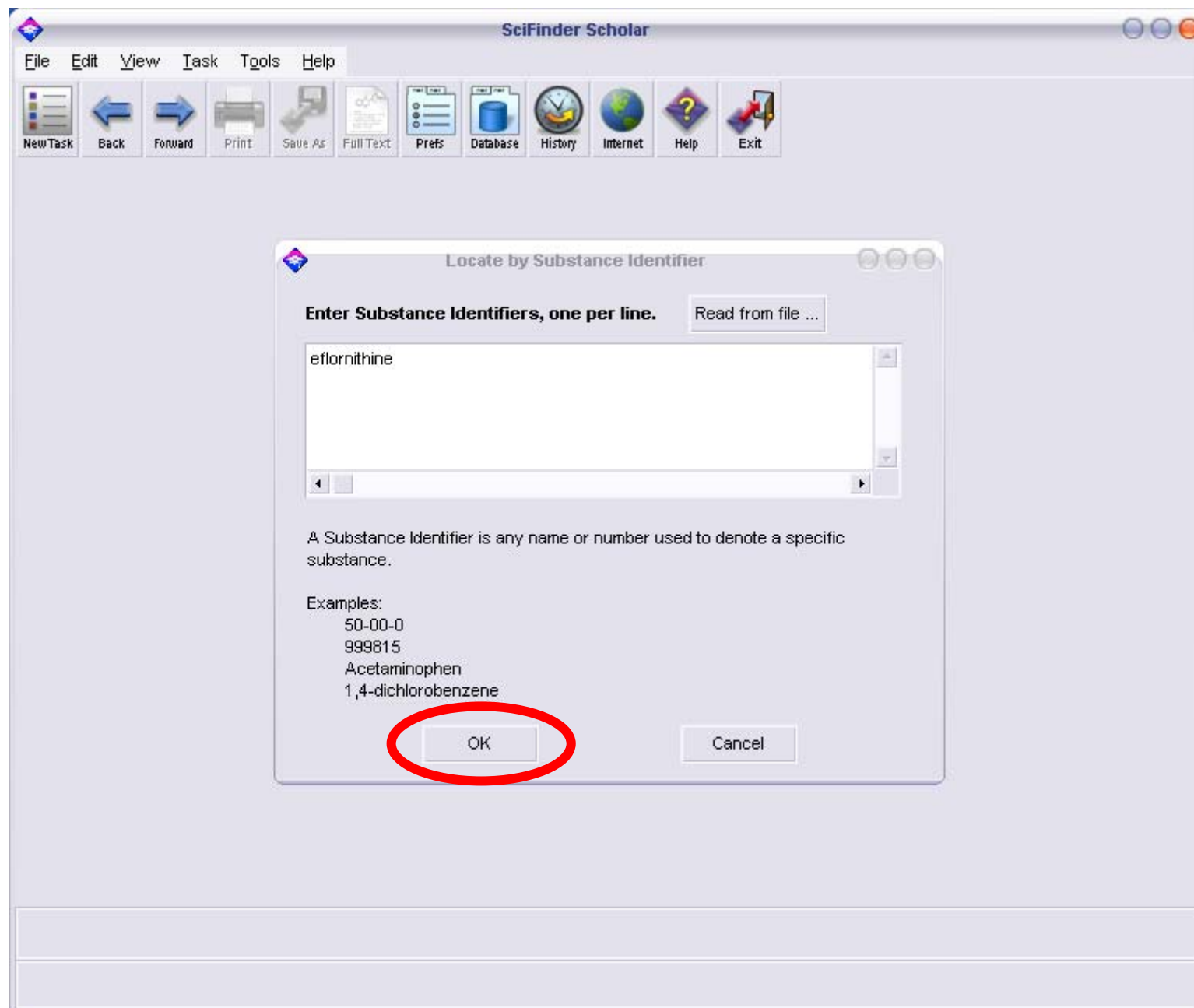


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$$\begin{array}{c}
 \text{NH}_2 \\
 | \\
 \text{F}_2\text{CH}-\text{C}-(\text{CH}_2)_3-\text{NH}_2 \\
 | \\
 \text{CO}_2\text{H}
 \end{array}$$

~1416 References
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70052-12-9

$$\begin{array}{c}
 \text{NH}_2 \\
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 \text{CO}_2\text{H}
 \end{array}$$

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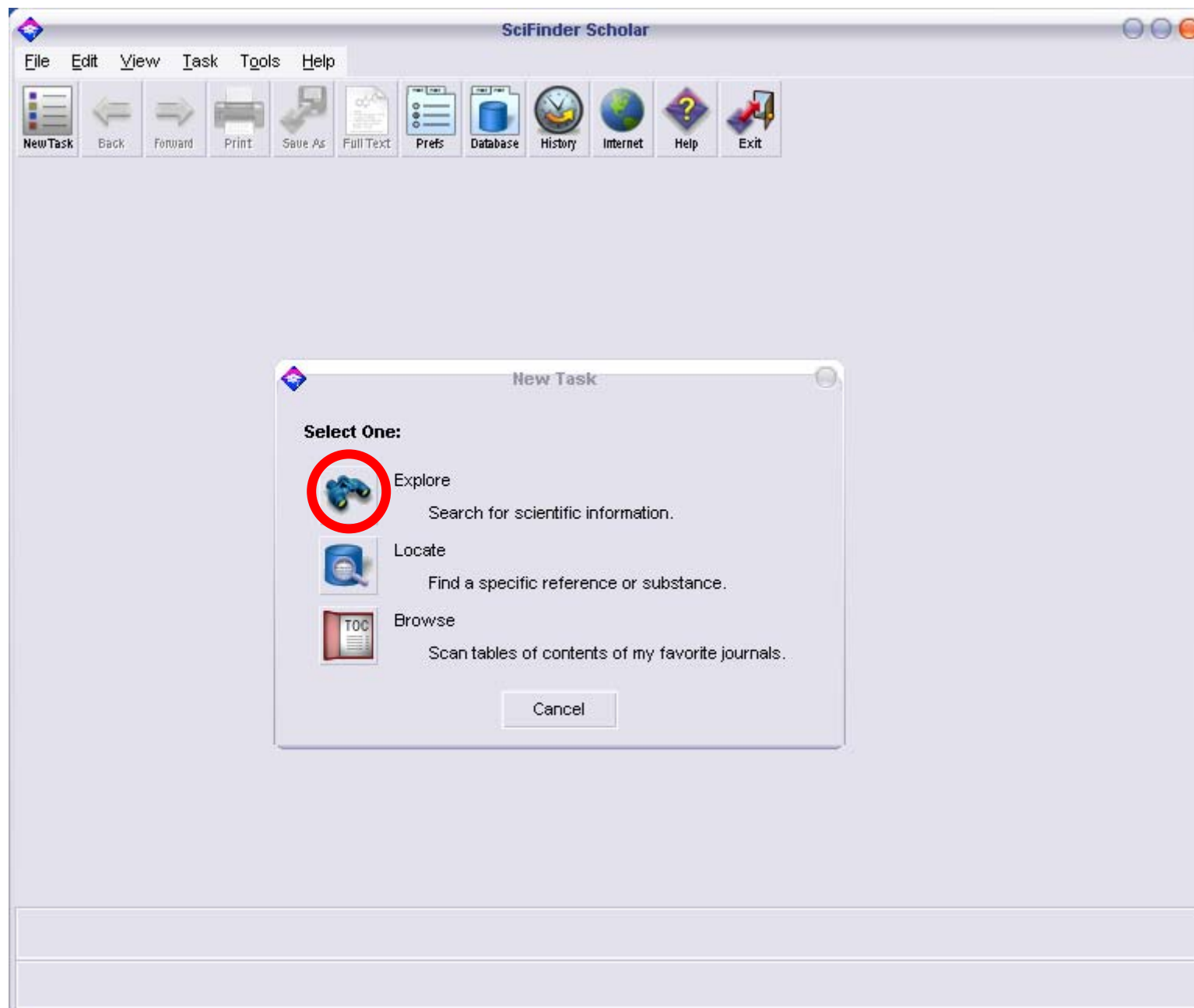
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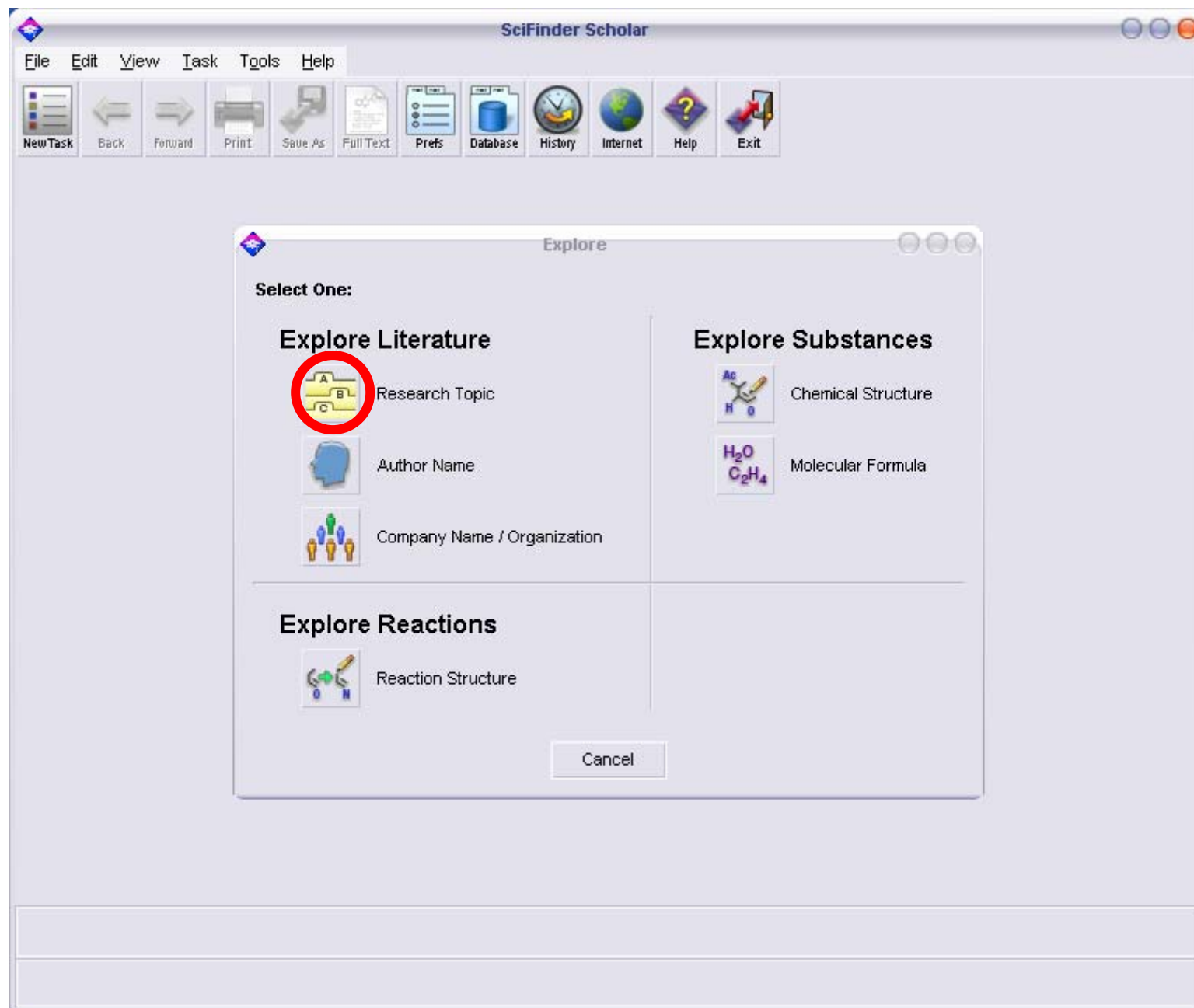
$$\begin{array}{c}
 \text{H}_2\text{N}-(\text{CH}_2)_3-\text{C}(\text{CHF}_2)(\text{NH}_2)-\text{CO}_2\text{H}
 \end{array}$$

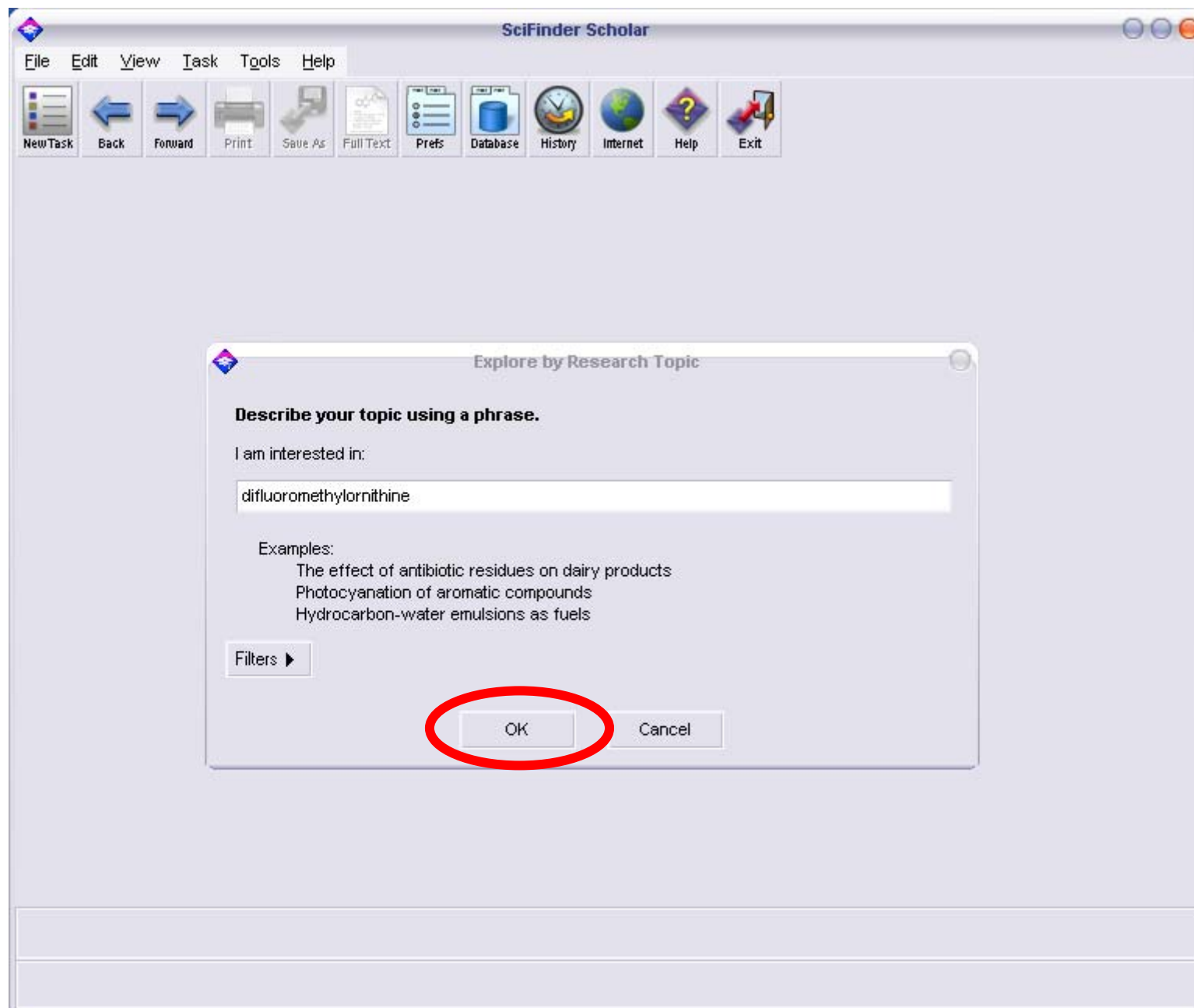
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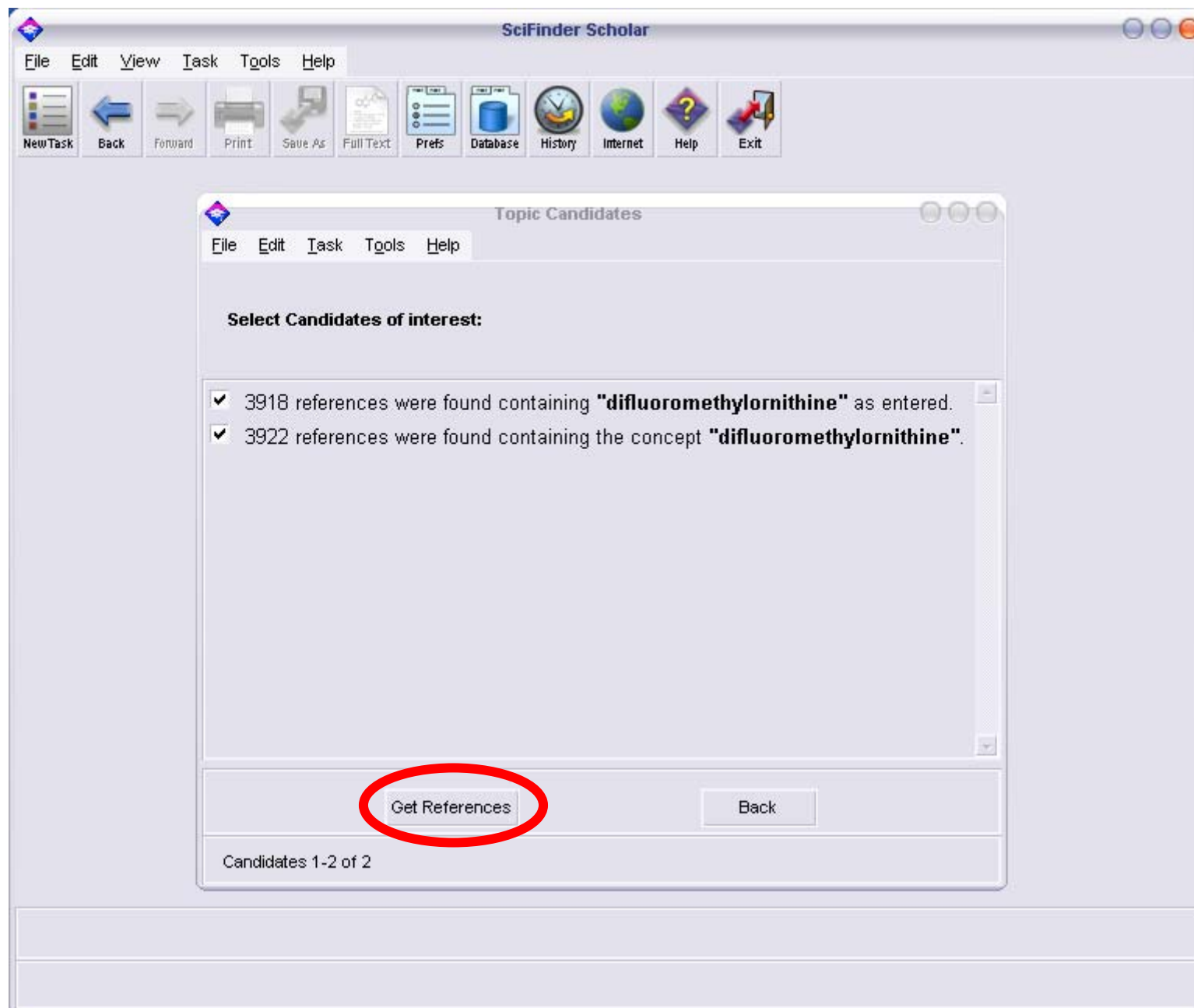
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☐ Sporn, Michael B.; Hong, Waun Ki. **Concomitant DFMO and sulindac chemoprevention of colorectal adenomas: a major clinical advance.** Nature Clinical Practice Oncology (2008), 5(11), 628-629. CODEN: NCPOB5 ISSN:1743-4254. AN 2008:1296539 CAPLUS

☐ Zhao, Yue-Chao; Chi, Yu-Jing; Yu, Yong-Sheng; Liu, Ji-Long; Su, Ren-Wei; Ma, Xing-Hong; Shan, Chun-Hua; Yang, Zeng-Ming. **Polyamines are essential in embryo implantation: expression and function of polyamine-related genes in mouse uterus during peri-implantation period.** Endocrinology (2008), 149(5), 2325-2332. CODEN: ENDOAO ISSN:0013-7227. CAN 149:421589 AN 2008:1255278 CAPLUS

☐ Xu, Haifang; Washington, Sharlene; Verderame, Michael F.; Manni, Andrea. **Role of non-receptor and receptor tyrosine kinases (TKs) in the antitumor action of α -difluoromethylornithine (DFMO) in breast cancer cells.** Breast Cancer Research and Treatment (2008), 112(2), 255-261. CODEN: BCTRD6 ISSN:0167-6806. AN 2008:1245142 CAPLUS

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☐ Perrin, Scott R.; Hauck, Wilhelm; Ndzie, Elias; Blehaut, Jean; Ludemann-Hombouger, Olivier; Nicoud, Roger-Marc; Pirkle, William H. **Purification of difluoromethylornithine by global process optimization: coupling of chemistry and chromatography with enantioselective crystallization.** Organic Process Research & Development (2007), 11(5), 817-824. CODEN: OPRDFK ISSN:1083-6160. CAN 149:248124 AN 2008:1027347 CAPLUS

☐ Velasco, Lucia; Secades, Lorena; Bordallo, Carmen; Bordallo, Javier; Garcia de Boto, Maria Jose; Rubin, Jose Manuel; Hidalgo, Aqustin; Cantabrana, Begona; Sanchez, Manuel. **Role of Putrescine on Androgen-Elicited**

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☐ Zhao, Yue-Chao; Chi, Y Zeng-Ming. **Polyamine polyamine-related ge** 2325-2332. CODEN: E

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☐ Lopez-Garcia, Carlos; L Faustino; Schreiber, Fe **embryo development** Endocrinology (2008), 2008:1193787 CAPLUS

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Refine by Research Topic

Describe your topic using a phrase.

I am interested in:

preparation

Examples:

The effect of antibiotic residues on dairy products

Photocyanation of aromatic compounds

Hydrocarbon-water emulsions as fuels

OK Cancel

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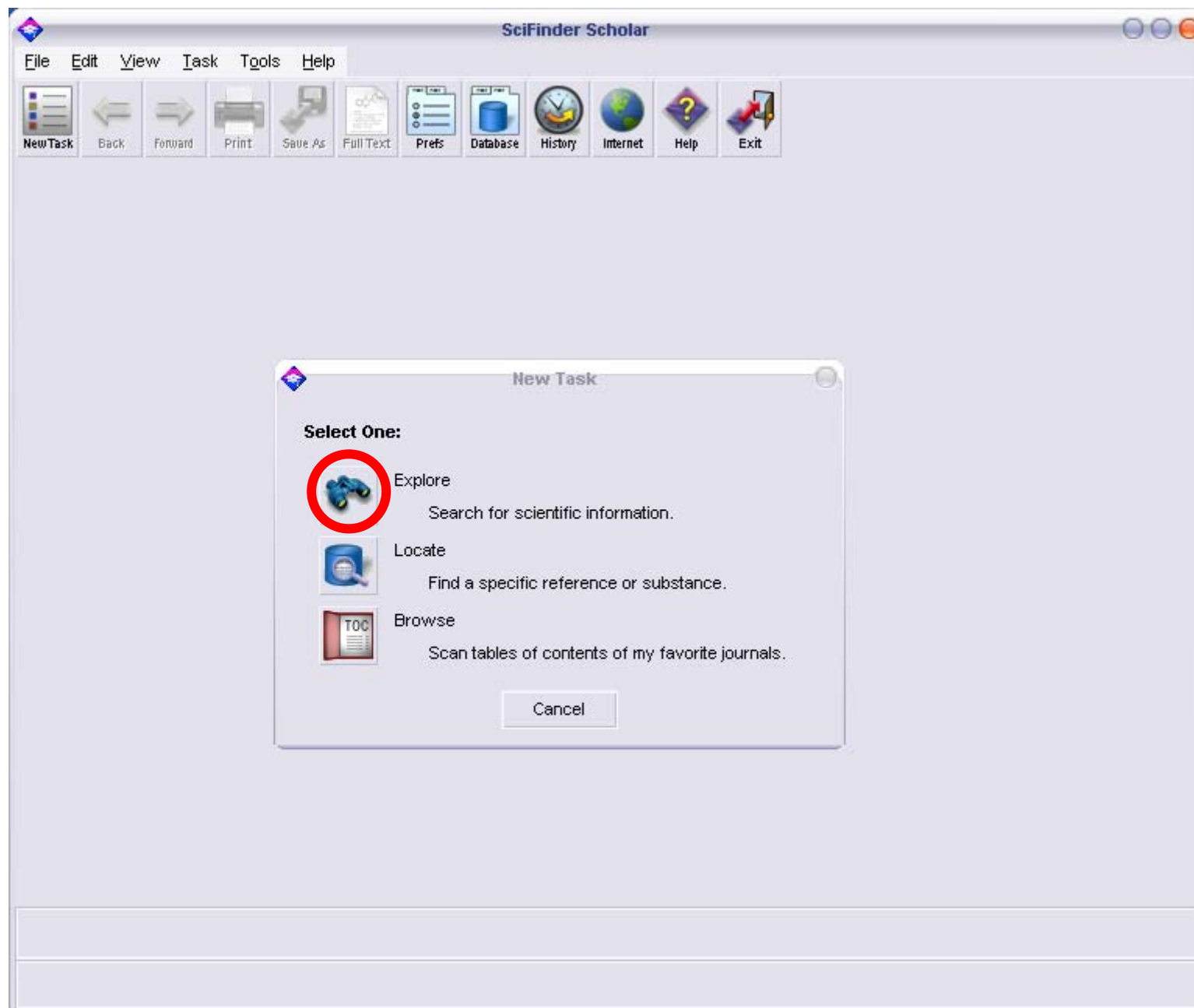
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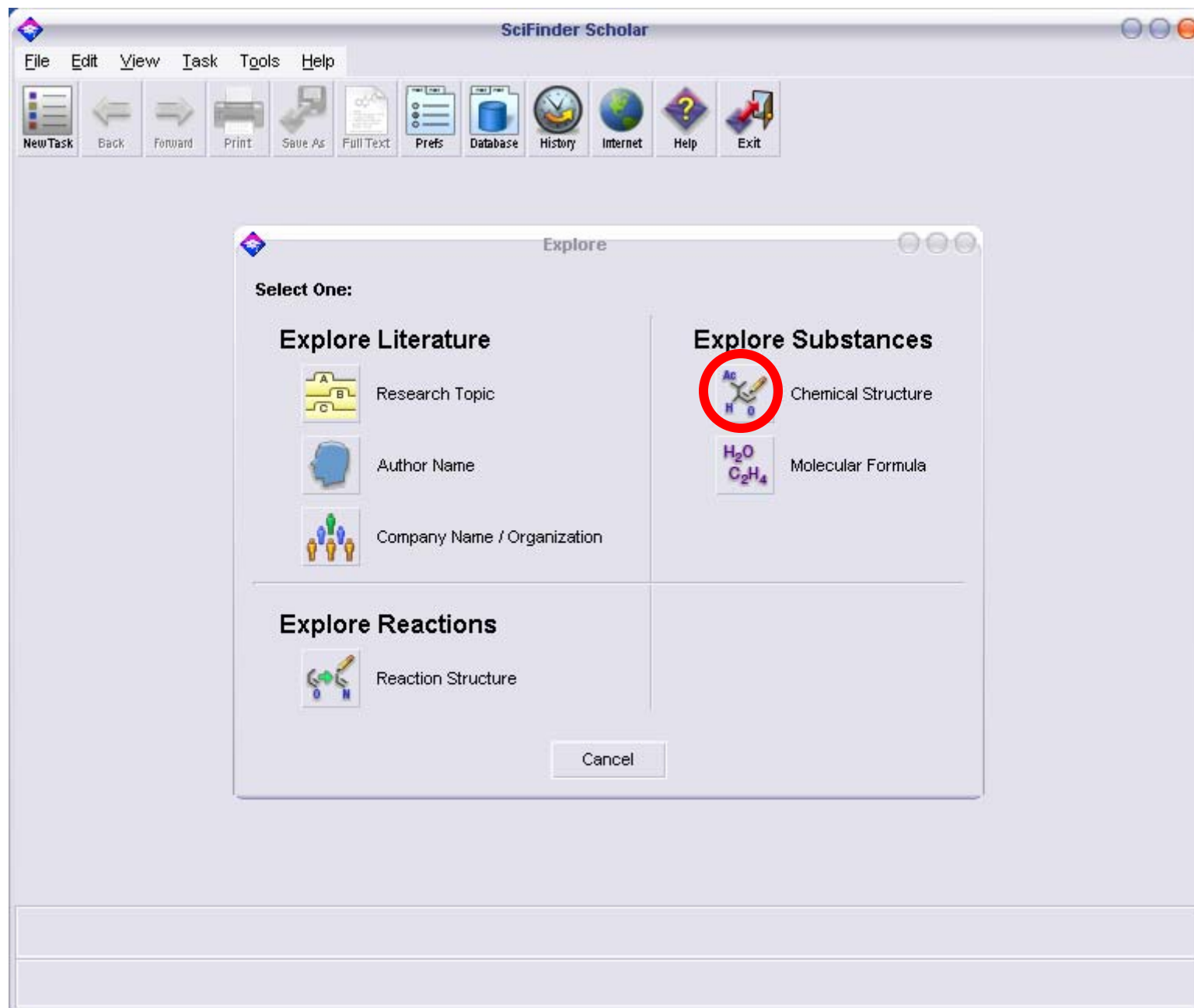
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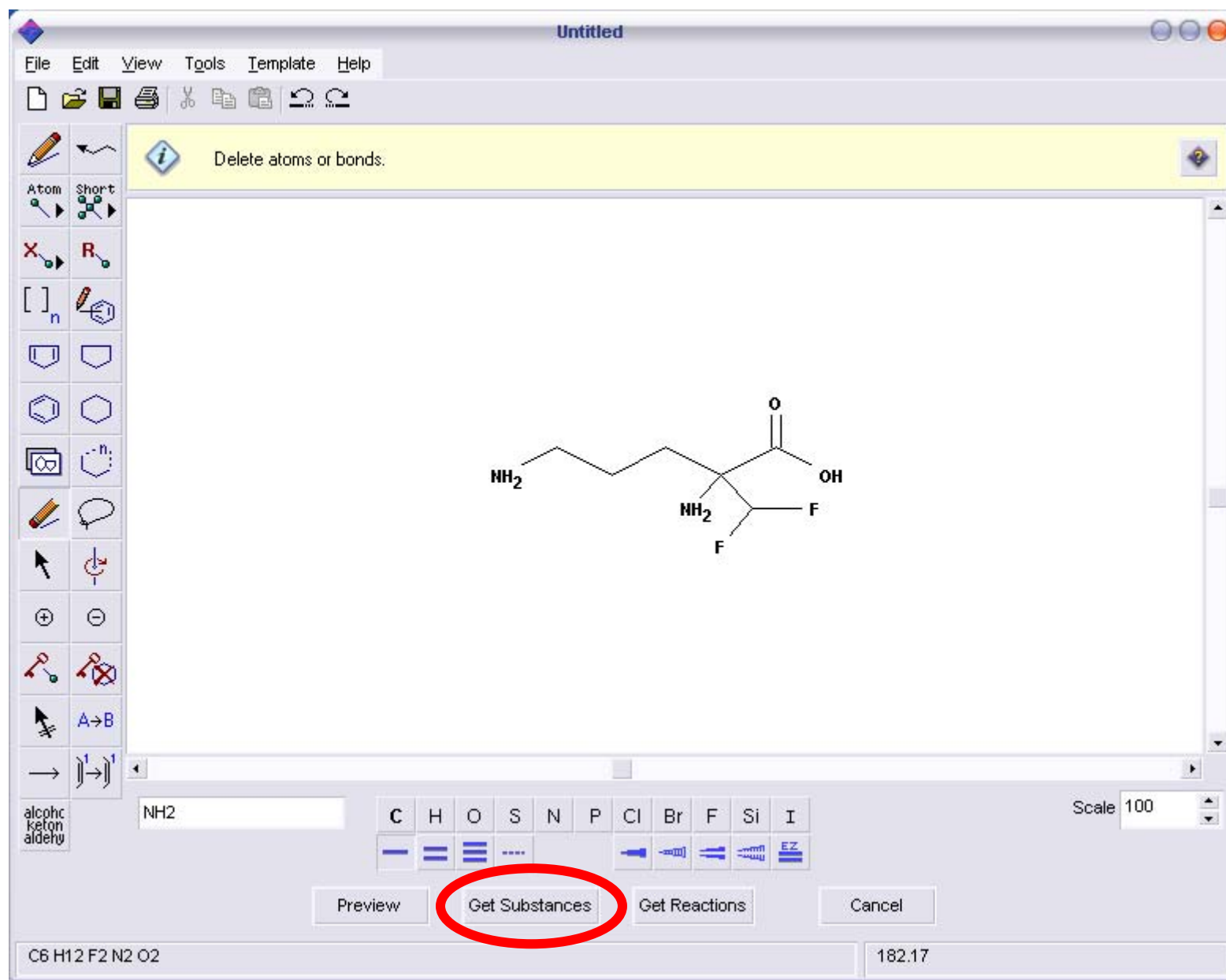
- ☐ Bordallo, Carmen; Cantabrana, Begona; Velasco, Lucia; Secades, Lorena; Meana, Clara; Mendez, Miriam; Bordallo, Javier; Sanchez, Manuel. **Putrescine modulation of acute activation of the β -adrenergic system in the left atrium of rat.** European Journal of Pharmacology (2008), 598(1-3), 68-74. CODEN: EJPHAZ ISSN:0014-2999. AN 2008:1298278 CAPLUS
- ☐ Lopez-Garcia, Carlos; Lopez-Contreras, Andres Joaquin; Cremades, Asuncion; Castells, Maria Teresa; Marin, Faustino; Schreiber, Fernanda; Penafiel, Rafael. **Molecular and morphological changes in placenta and embryo development associated with the inhibition of polyamine synthesis during midpregnancy in mice.** Endocrinology (2008), 149(10), 5012-5023. CODEN: ENDOAO ISSN:0013-7227. CAN 149:370812 AN 2008:1193787 CAPLUS
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☒ Exact search
☐ Substructure search
☐ Similarity search

Filters ▼

Substance class	Return substances that are: ☐ Alloys ☐ Coordination compounds ☐ Incompletely defined ☐ Mixtures ☐ Polymers ☒ Organics, and others not listed above
Structure components	☐ Only return substances that are single components
Commercial availability	☐ Only return substances that are commercially available
References	☐ Only return substances having one or more references
Studies	Only return substances having these reported studies: ☐ Analytical ☐ Biological ☐ Preparation ☐ Reactant or Reagent

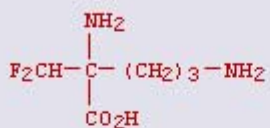
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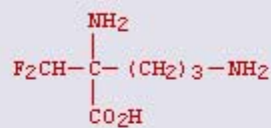
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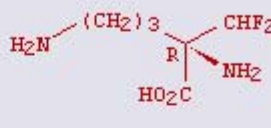
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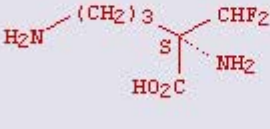
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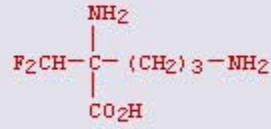
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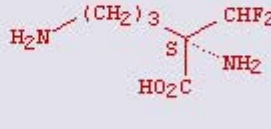
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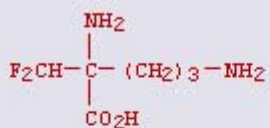
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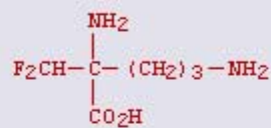
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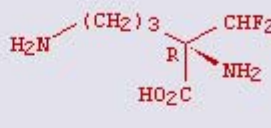
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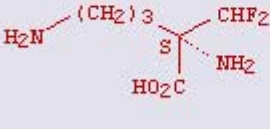
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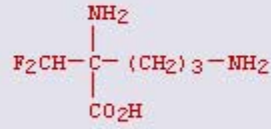
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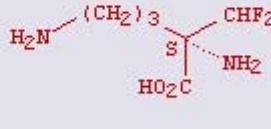
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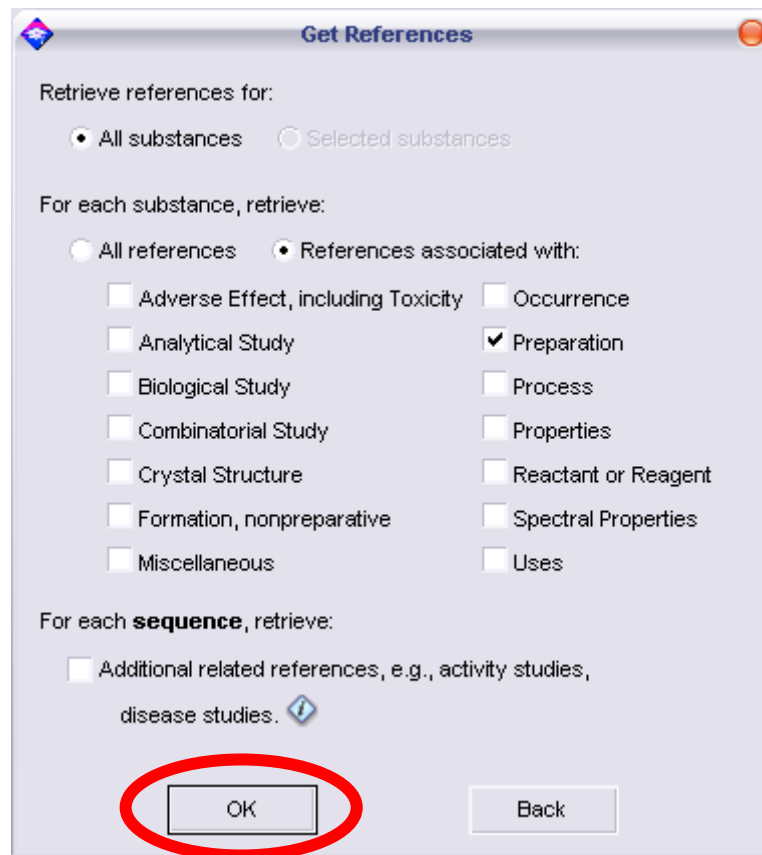
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Get References

Retrieve references for:

☒ All substances ☐ Selected substances

For each substance, retrieve:

☐ All references ☒ References associated with:

☐ Adverse Effect, including Toxicity	☐ Occurrence
☐ Analytical Study	☒ Preparation
☐ Biological Study	☐ Process
☐ Combinatorial Study	☐ Properties
☐ Crystal Structure	☐ Reactant or Reagent
☐ Formation, nonpreparative	☐ Spectral Properties
☐ Miscellaneous	☐ Uses

For each **sequence**, retrieve:

☐ Additional related references, e.g., activity studies, disease studies. 

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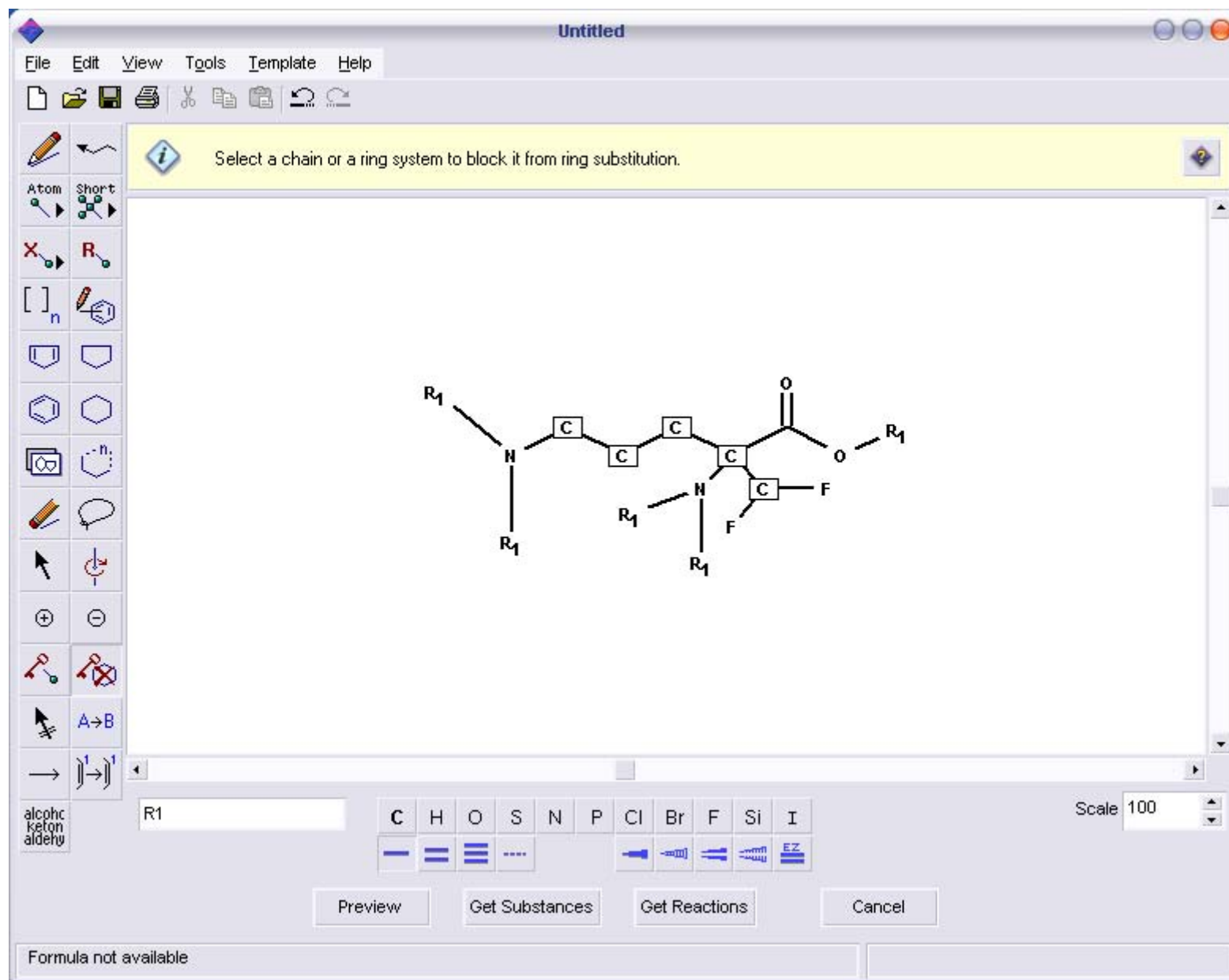
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New efficient syntheses of α -difluoromethyl- and α -trifluoromethyl-ornithine

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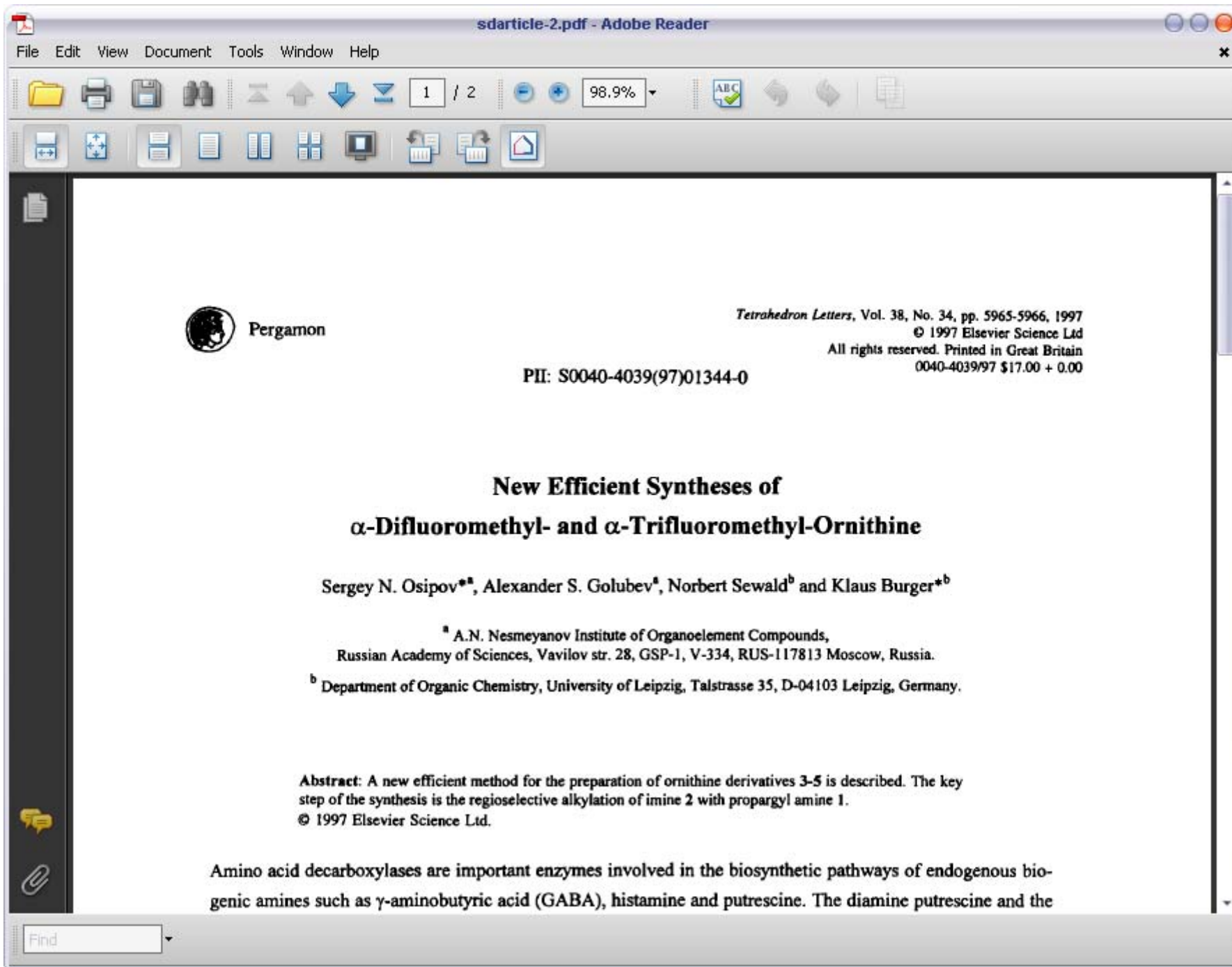
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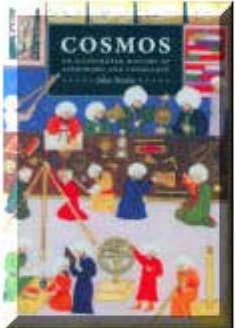
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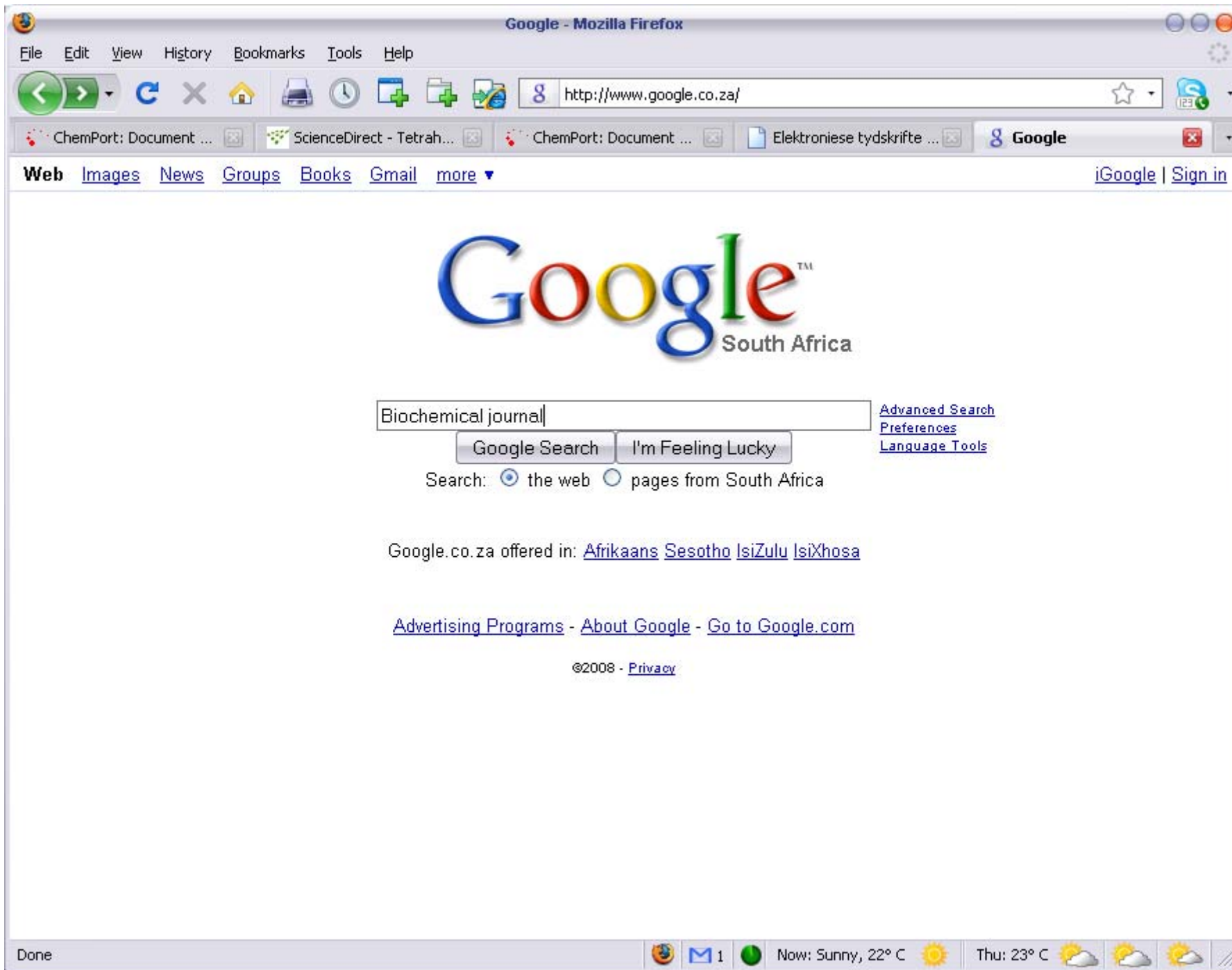
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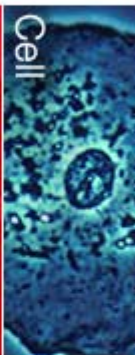
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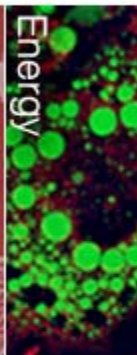
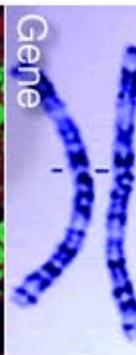
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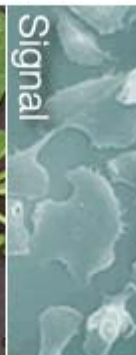
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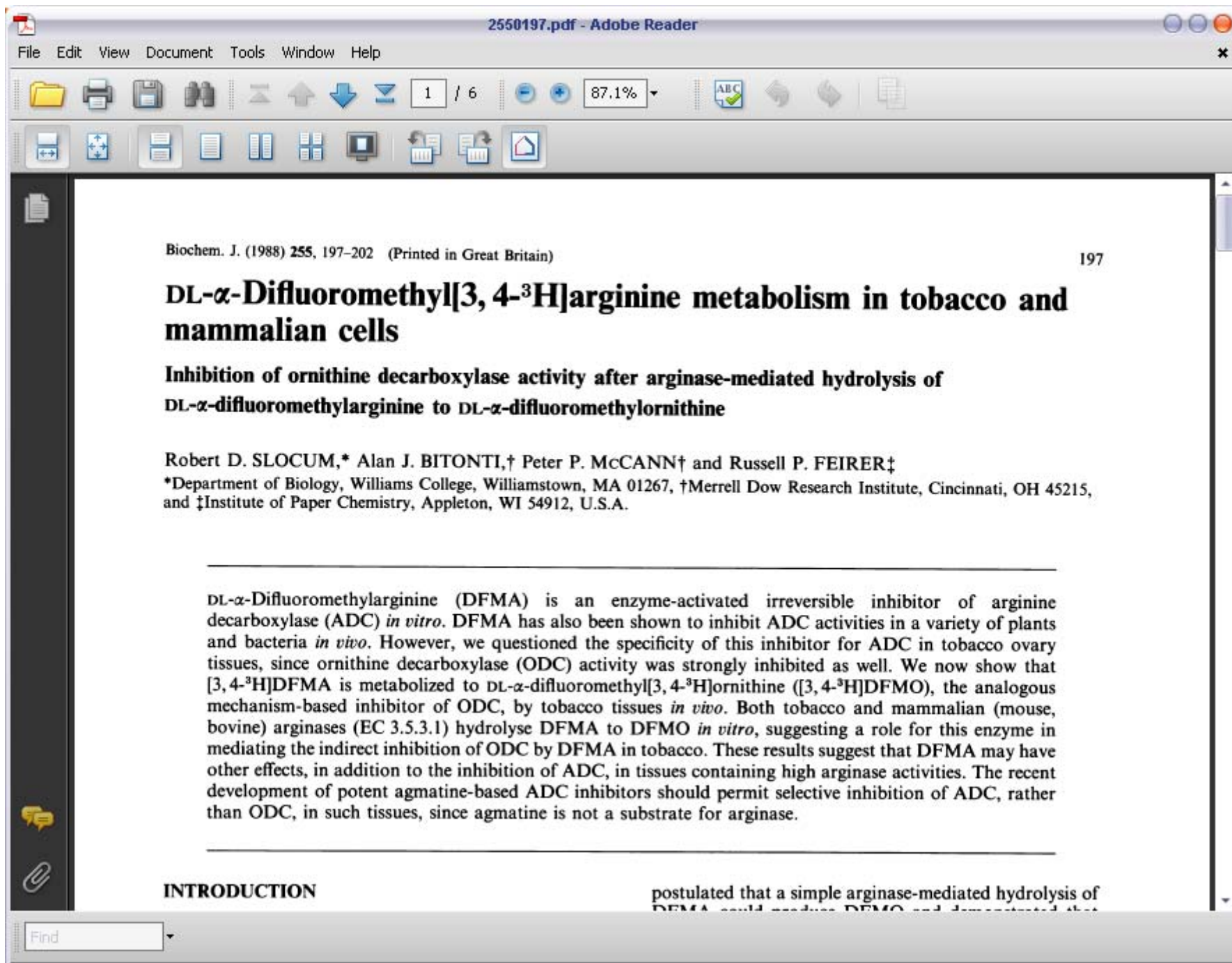
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K Karlsson and S L Marklund.....**223–228**
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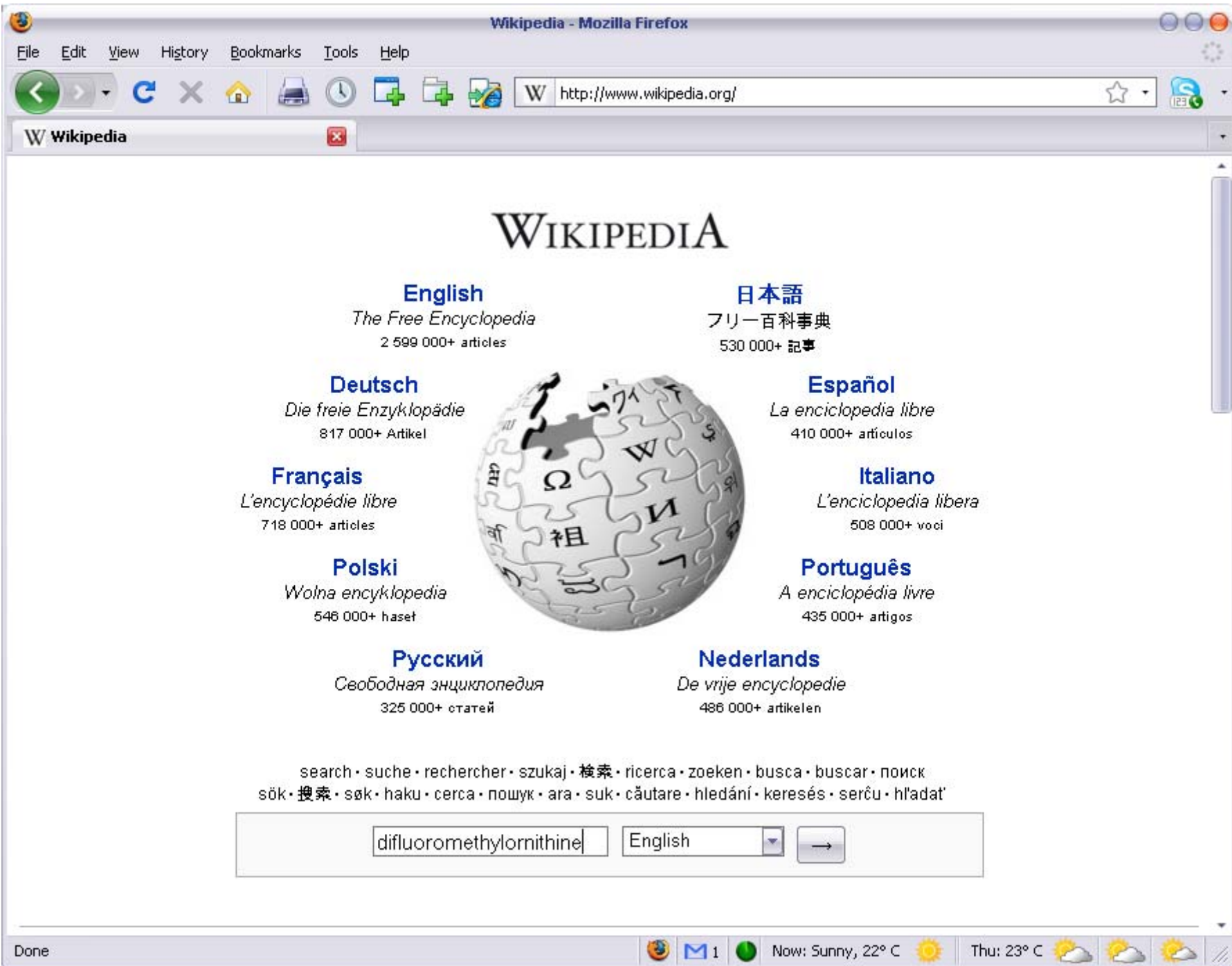
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- If you know who to ask to get it for you
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Online *encyclopedias*: Easy access = easy teaching?

Wikipedia (and its role in teaching)



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Eflornithine

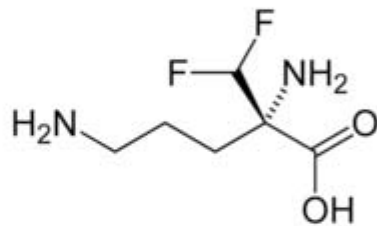
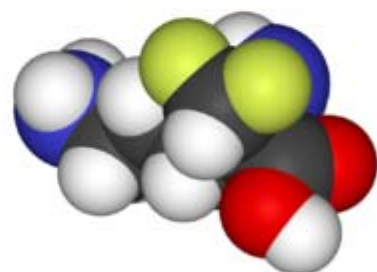
From Wikipedia, the free encyclopedia
(Redirected from [Difluoromethylornithine](#))

Eflornithine (α -difluoromethylornithine or DFMO) is a [drug](#) manufactured by [Sanofi-Aventis](#) which has various uses. It was initially developed for cancer treatment, but while having little use in treating malignancies, it was found to be highly effective in [African trypanosomiasis](#) (sleeping sickness), especially the West African form (*Trypanosoma brucei gambiense*).^[1] In the United States it is known by the brand name **Ornidyl**.^[2] A recent study (reported 2008^[3]) conducted by [UC Irvine](#) researchers indicates that, when combined with [sulindac](#) (an anti-inflammatory drug), DFMO significantly reduces the risk of recurring [colorectal polyps](#).

Contents [\[hide\]](#)

- Sleeping sickness treatment
 - Function
 - Production
- Dosing
- Hair growth inhibitor cream
- References
- External links

Sleeping sickness treatment [\[edit\]](#)

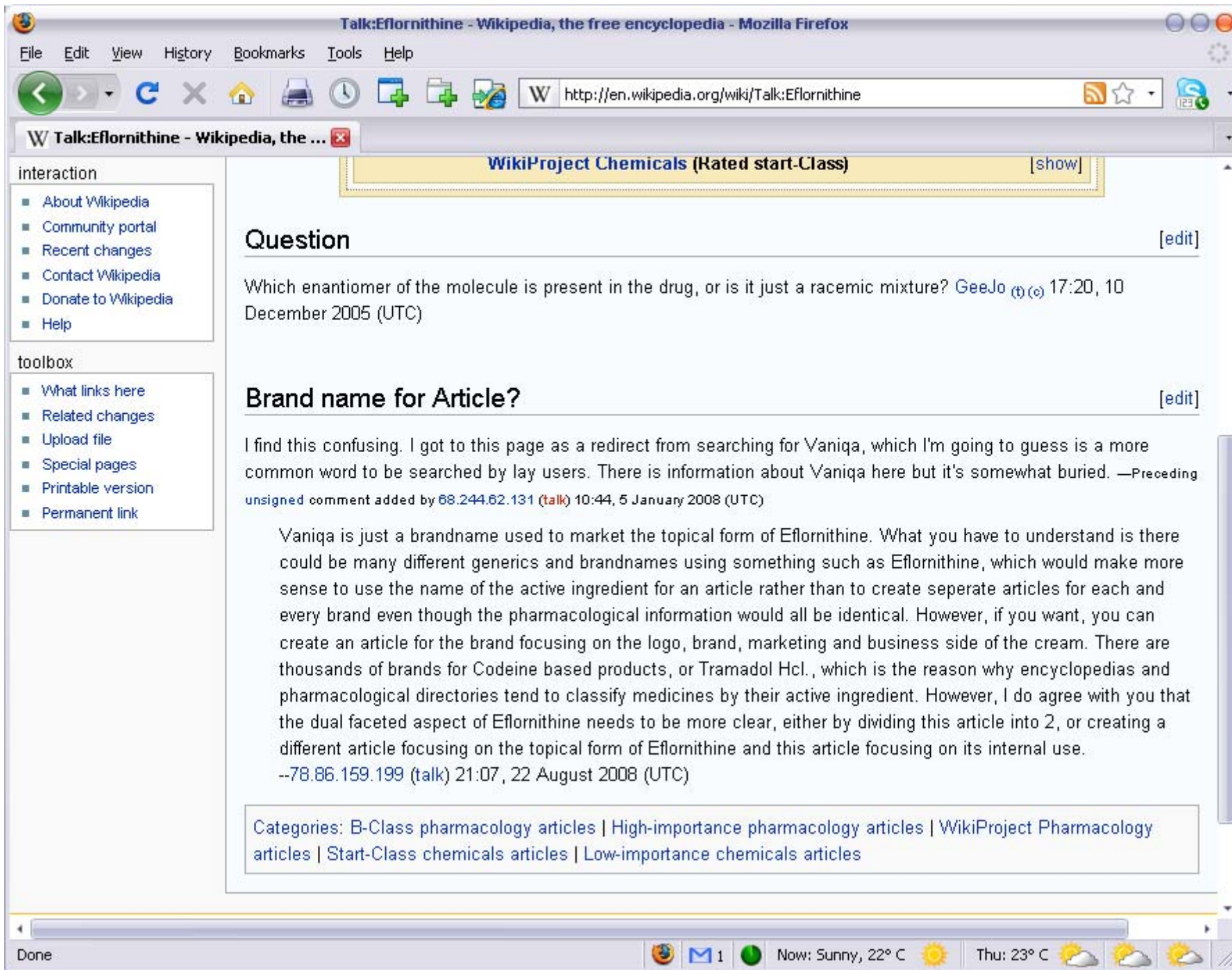



Eflornithine

Systematic (IUPAC) name	
2,5-diamino-2-(difluoromethyl)pentanoic acid	
Identifiers	
CAS number	70052-12-9

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Coenzyme A

From Wikipedia, the free encyclopedia

Coenzyme A (**CoA**, **CoASH**, or **HSCoA**) is a **coenzyme**, notable for its role in the **synthesis** and **oxidation** of **fatty acids**, and the oxidation of **pyruvate** in the **citric acid cycle**. It is adapted from **cysteamine**, **pantothenate**, and **adenosine triphosphate**.

Contents [hide]

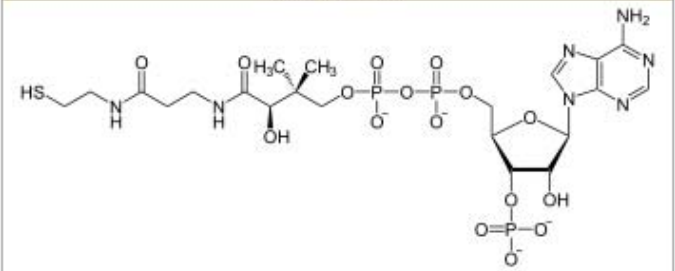
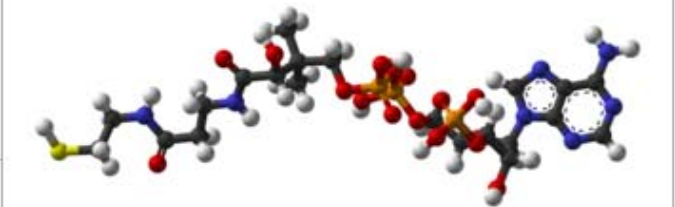
- Biosynthesis
- Function
- List of coenzyme A activated acyl groups
- Additional images
- References

Biosynthesis [edit]

Coenzyme A is synthesized in a five-step process from pantothenate:

- Pantothenate** is phosphorylated to 4'-phosphopantothenate by the enzyme **pantothenate kinase**
- A cysteine is added to 4'-phosphopantothenate by the enzyme **phosphopantothenoylcysteine synthetase** to form 4'-phospho-N-pantothenoylcysteine (PPC)
- PPC is decarboxylated to 4'-phosphopantetheine by **phosphopantothenoylcysteine decarboxylase**
- 4'-phosphopantetheine is adenylated to form dephospho-CoA by the enzyme **phosphopantetheine adenyl transferase**
- Finally, dephospho-CoA is phosphorylated using ATP to coenzyme A by the enzyme **dephosphocoenzyme A kinase**.

Coenzyme A

Identifiers

CAS number	[85-61-0]
PubChem	317
MeSH	Coenzyme+A
SMILES	 [show]

Properties

Molecular formula	C ₂₁ H ₃₆ N ₇ O ₁₆ P ₃ S
Molar mass	767.535

Except where noted otherwise, data are given for materials in their standard state

Phosphopantothenoylcysteine decarboxylase - Wikipedia, the free encyclopedia - Mozilla Firefox

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Phosphopantothenoylcysteine decarboxylase

From Wikipedia, the free encyclopedia

In **enzymology**, a **phosphopantothenoylcysteine decarboxylase** (EC 4.1.1.36 [↗](#)) is an **enzyme** that **catalyzes** the **chemical reaction**

$$\text{N-}[(\text{R})\text{-4'-phosphopantothenoyl}]\text{-L-cysteine} \rightleftharpoons \text{pantotheine 4'-phosphate} + \text{CO}_2$$

Hence, this enzyme has one **substrate**, [[N-[(R)-4'-phosphopantothenoyl]-L-cysteine]], and two **products**, **pantotheine 4'-phosphate** and **CO₂**.

This enzyme belongs to the family of **lyases**, specifically the carboxy-lyases, which cleave carbon-carbon bonds. The systematic name of this enzyme class is **N-[(R)-4'-phosphopantothenoyl]-L-cysteine carboxy-lyase (pantotheine 4'-phosphate-forming)**. Other names in common use include **4-phosphopantotheoylcysteine decarboxylase**, **4-phosphopantothenoyl-L-cysteine decarboxylase**, **PPC-decarboxylase**, and **N-[(R)-4'-phosphopantothenoyl]-L-cysteine carboxy-lyase**. This enzyme participates in **pantothenate and coa biosynthesis**.

Contents [\[hide\]](#)

- 1 Structural studies
- 2 References
- 3 External links
 - 3.1 Gene Ontology (GO) codes

Structural studies [\[edit\]](#)

As of late 2007, 3 **structures** have been solved for this class of enzymes, with **PDB** accession codes [1MVL](#) [↗](#), [1MVN](#) [↗](#), and [1QZU](#) [↗](#).

References [\[edit\]](#)

- IUBMB entry for 4.1.1.36 [↗](#)
- BRENDA references for 4.1.1.36 [↗](#) (Recommended.)

Done

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Online *encyclopedias* : Easy access = easy teaching?

- Don't fight against the trends
- Use it to your advantage
- Teach (Preach!) what a Wiki is, and what it ain't

Acknowledgements

- Elbie van Wyk
- BSc Hons students in Chemistry and Biochemistry
- Annamie Wessels