

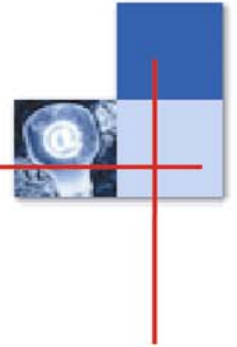
232nd ACS National Meeting & Exposition
San Francisco, CA
September 11, 2006



A New Look At The Merged Markush Service (MMS)

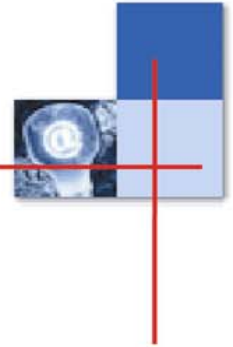
Joe Terlizzi
Questel-Orbit, Inc.
jterlizzi@questel.orbit.com

Agenda



- **Background and Search Procedure**
- **New Enhancements**
- **Tips and Tricks**
- **Exporting Results**

Merged Markush Service



- Cooperative agreement between



- Exclusively hosted by



Background



- The Markush DARC system is a topological search system that was developed in the 1980s and released in 1987 in two separate files:
 - **MPHARM** – produced by INPI
 - **WPIM** – produced by Thomson
- The two databases were loaded onto the Questel platform and searched separately

Background

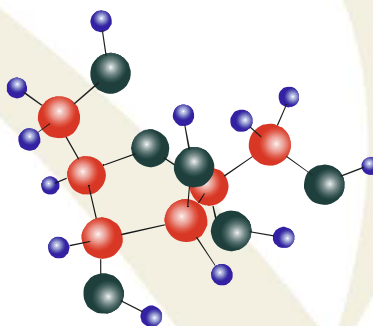


- In 1998, the Merged Markush System (MMS) was created so that a single search with similar commands could be run across both databases
- The system was supplemented by both a front file for new records and a back file for older records. There are presently four segments in MMS
 - **FRONTF** – 1998-present
 - **WPIM** – 1987-1998
 - **MPHARM** – 1987-1999
 - **BACKF** – 1961-1986

Background



- **MMS now contains over 2 million structure records representing over 600,000,000 specific real and prophetic structures**



Background



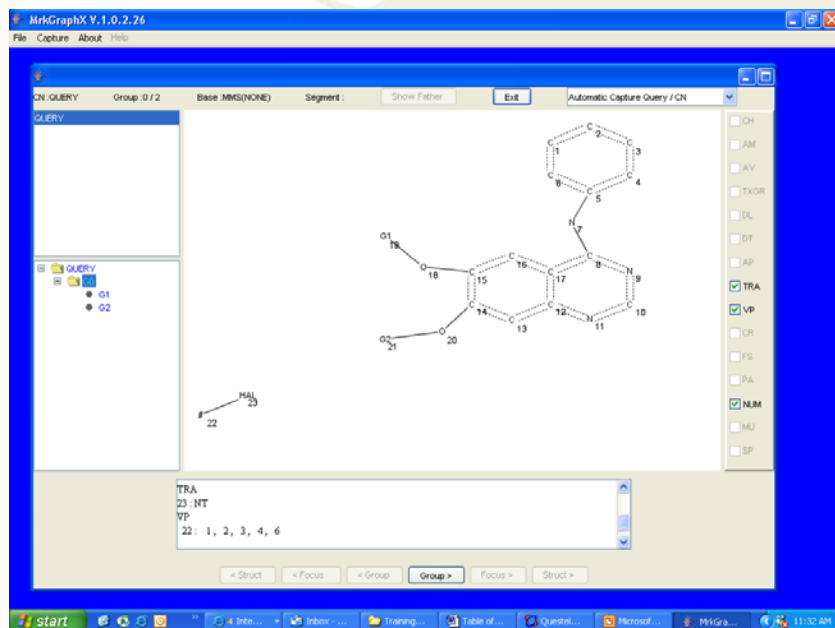
- In 2004, MMS was transferred onto a UNIX operating system
- UNIX brought:
 - Faster searches, steady performances
 - 1,000,000 Compound Numbers as a limit for the RE candidate search
 - Query processing in one search statement at one fee
 - More user-friendly structure display
 - Improved help menus

Search Procedure

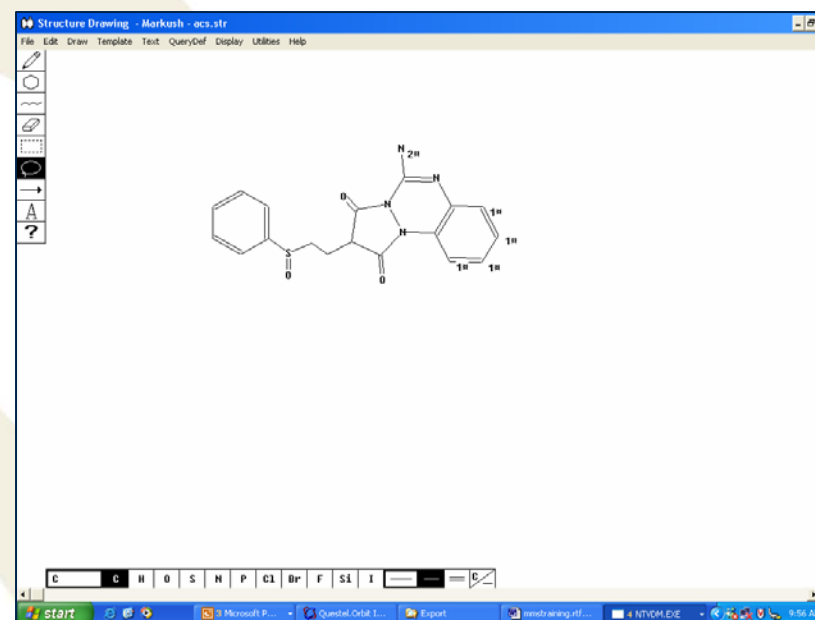


Enter Structure Query Using:

Text Query Input



TOPFRAG Software

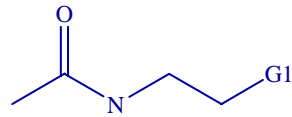
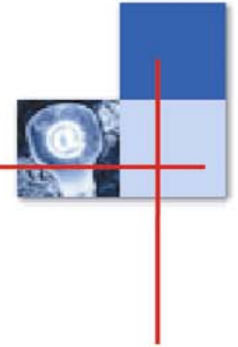


Search Procedure

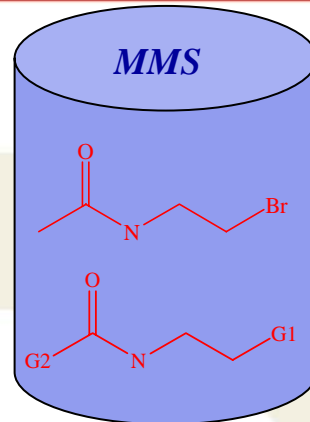


- A screening search called the **RE** (REtrieve candidates) search is run on query structure to retrieve a subset of structures containing fragments of the query structure
- The **AA** (Atom-by-Atom) search on the RE set is run to retrieve exact answers
- The CNs are transferred to the Questel-Orbit bibliographic system to retrieve the patent records in Derwent and Pharm

Search Procedure

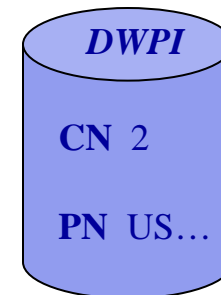
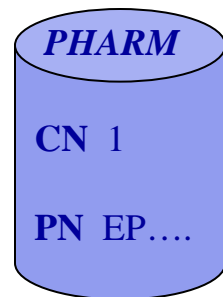


Structure search



CN link

CN link

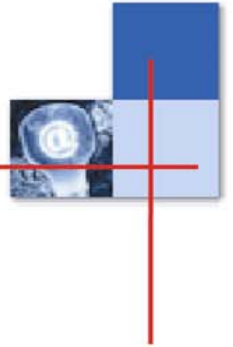


New Enhancements-SDI



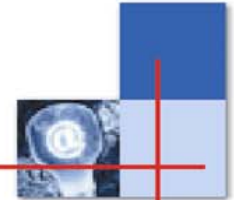
- **SDIs**
 - **Clients can now run weekly and monthly alerts (SDIs) for chemical structure queries**
 - **SDI setup and editing is easy**
 - **Clients are notified by email and results are sent as a compound number list**

New Enhancements-SDI



- **SDIs**
 - **SDI Compound Number lists can be accessed the same as search results are:**
 - through the Merged Markush Service and then transferred to the QO bibliographic service
 - directly by running the ***MD** command on the answer list in the bibliographic service.

New Enhancements-SDI



Sample Email notification:

Questel-Orbit MMS SDI

UserId: 04201:N1

Your [2] Questel-Orbit MMS SDI have been processed on 04/02/2006.

SDI - **imidazole** has 3 answers.

To access this SDI in MMS, type RF SDI imidazole

To access the patent documents in DWPI, recall the Markush Darc list as *MD imidazole

SDI - **imidazole2** has 22 answers.

To access this SDI in MMS, type RF SDI imidazole2

To access the patent documents in DWPI, recall the Markush Darc list as *MD imidazole2

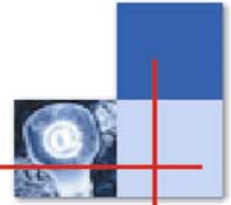
To consult your result, please connect to MMS server on Questel-Orbit.

Please contact your local Questel-Orbit Helpdesk if you have any questions.

Thank you for using Questel-Orbit.

The MMS team.

New Enhancements-SDI



- ST - (BA,CN,QT,RF,RE,AA,SB,BL,INFO,HELP) ?

rf sdi imidazole2

Recalling an SDI in MMS

Recall in progress of SDI imidazole2

The following request was recalled successfully :

#.	Name	Last Date	Answ.
1	imidazole2	2006-02-18	22

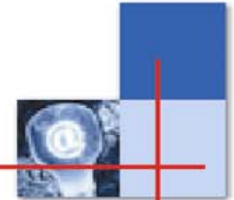
The answers and the optional RX candidates were placed in the answer set : R01

#.	Name	Search Database	answer(s)	RX	RX File
1	R01	SDI	MMS	22	

The following set was saved successfully

#.	Name	CN	Search File	Date
31	imidazole2SDI	22	SDI MMS	2006-02-21

New Enhancements-SDI



Recalling an SDI in Derwent World Patent Index

file dwpi

Search statement 1

***Md imidazole/cn**

** SS 1: Results 2

Search statement 2

prt pn

1/2 DWPI - (C) Thomson Derwent- image

CPIM Thomson Derwent

PN - WO2005112920 A1 20051201 DW2006-01 A61K-031/404 Eng 89p *

AP: 2005WO-IB01459 20050419

DSNW: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ

DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG

KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ

OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG

US UZ VC VN YU ZA ZM ZW

DSRW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS

IT KE LS LT LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG

ZM ZW

New Enhancements-SDI

Previous updates of an SDI can be recalled by using the command RF HISDI

rf hisdi

The SDI requests saved on your account are :

#.	Name	last Date	Answ.
1	imidazole	2006-02-25	19
2	imidazolex	2006-02-25	20

Please, enter the name or the number of the SDI to recall :
?

1

Recall in progress of SDI imidazole

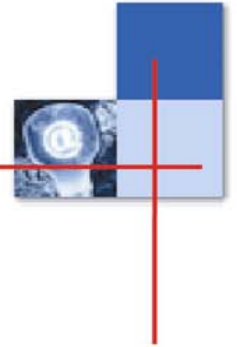
#.	Name	last Date	Answ.
1	imidazole	2005-12-24	11
2	imidazole	2005-12-31	11
3	imidazole	2006-01-07	10
4	imidazole	2006-01-14	5
5	imidazole	2006-01-21	4
6	imidazole	2006-01-28	18
7	imidazole	2006-02-04	3
8	imidazole	2006-02-11	22
9	imidazole	2006-02-18	21
10	imidazole	2006-02-25	19

Please, enter the index of process to load ?

?

2

New Enhancements-PARSE



- **PARSE Command**
 - Allows you to separate a Compound Number (CN) set into up to four distinct CN lists.
 - These new lists can be processed separately in the bibliographic system

New Enhancements-PARSE



PARSE can split an R set into up to four new CN lists:

- **GEN.P** will contain only generic compound numbers from MPHARM and BACKF
- **SPC.P** will contain only specific compound numbers from MPHARM and BACKF
- **GEN.W** will contain only generic compound numbers from WPIM and FRONTF
- **SPC.W** will contain only specific DCR compounds numbers from WPIM and FRONTF

Since an R set is created for each list, all of these lists can be separately saved and processed.

```
Atom by Atom Search started on R set R00
  87 answers(s) for 15978 candidates (no rx candidate(s) )
 114 answers(s) for 32156 candidates (no rx candidate(s) )
 125 answers(s) for 48265 candidates (no rx candidate(s) )
 154 answers(s) for 64710 candidates (no rx candidate(s) )
 163 answers(s) for 81190 candidates (no rx candidate(s) )
 175 answers(s) for 96890 candidates (no rx candidate(s) )
 195 answers(s) for 109120 candidates (no rx candidate(s) )
```

```
Removing duplicates
Atom by Atom Search completed on R set R06
- 203 answer(s) stored in R set R08
R08 - AA / R06 : 203 answer(s)
```

The R08 answer set contains 203 compound numbers

- ST - (BA, CN, QT, RF, RE, AA, SB, BL, INFO, HELP) ?

PARSE R08 is executed.

▼ parse r08

The CN answer set R08 is split into:

#.	Name	Search Database	answer(s)	RX	RX File
1	R09	GEN.P MMS	74		
2	R10	SPC.P MMS	26		
3	R11	GEN.W MMS	61		
4	R12	SPC.W MMS	42		

The answer set is split into four lists

- ST - (BA, CN, QT, RF, RE, AA, SB, BL, INFO, HELP) ?

- ST - (BA,CN,QT,RF,RE,AA,SB,BL,INFO,HELP) ?

```
2 R10 SPC.F MMS 20
3 R11 GEN.W MMS 61
4 R12 SPC.W MMS 42
```

- ST - (BA, CN, QT, RF, RE, AA, SB, BL, INFO, HELP) ?

▼ li r12 1-10

LI R12 1-10 will list the first 10 specific DCR numbers from set R12

R12 - SPC.W / MMS : 42 answer(s)

- 1 CN = R04741
- 2 CN = R11795
- 3 CN = R14616
- 4 CN = R16810
- 5 CN = R18542
- 6 CN = R16415
- 7 CN = R22814
- 8 CN = R00960
- 9 CN = R04929
- 10 CN = R07310

?

```
- ST - (BA,CN,QT,RF,RE,AA,SB,BL,INFO,HELP) ?  
sv cn r11 dgenerics  
  
Saving in progress  
.  
.  
The following set was saved successfully  
  
#. Name CN Search File Date  
17 dgenerics 61 GEN.W MMS 2006-08-27  
  
- ST - (BA,CN,QT,RF,RE,AA,SB,BL,INFO,HELP) ?  
sv cn r12 dspecifics  
  
Saving in progress  
.  
.  
The following set was saved successfully  
  
#. Name CN Search File Date  
18 dspecifics 42 SPC.W MMS 2006-08-27
```

The R sets can be saved as a CN list for transfer to the bibliographic system.

New Enhancements- Subaccount

NEW COMMANDS

- **SUBACCT** – can be set up as mandatory

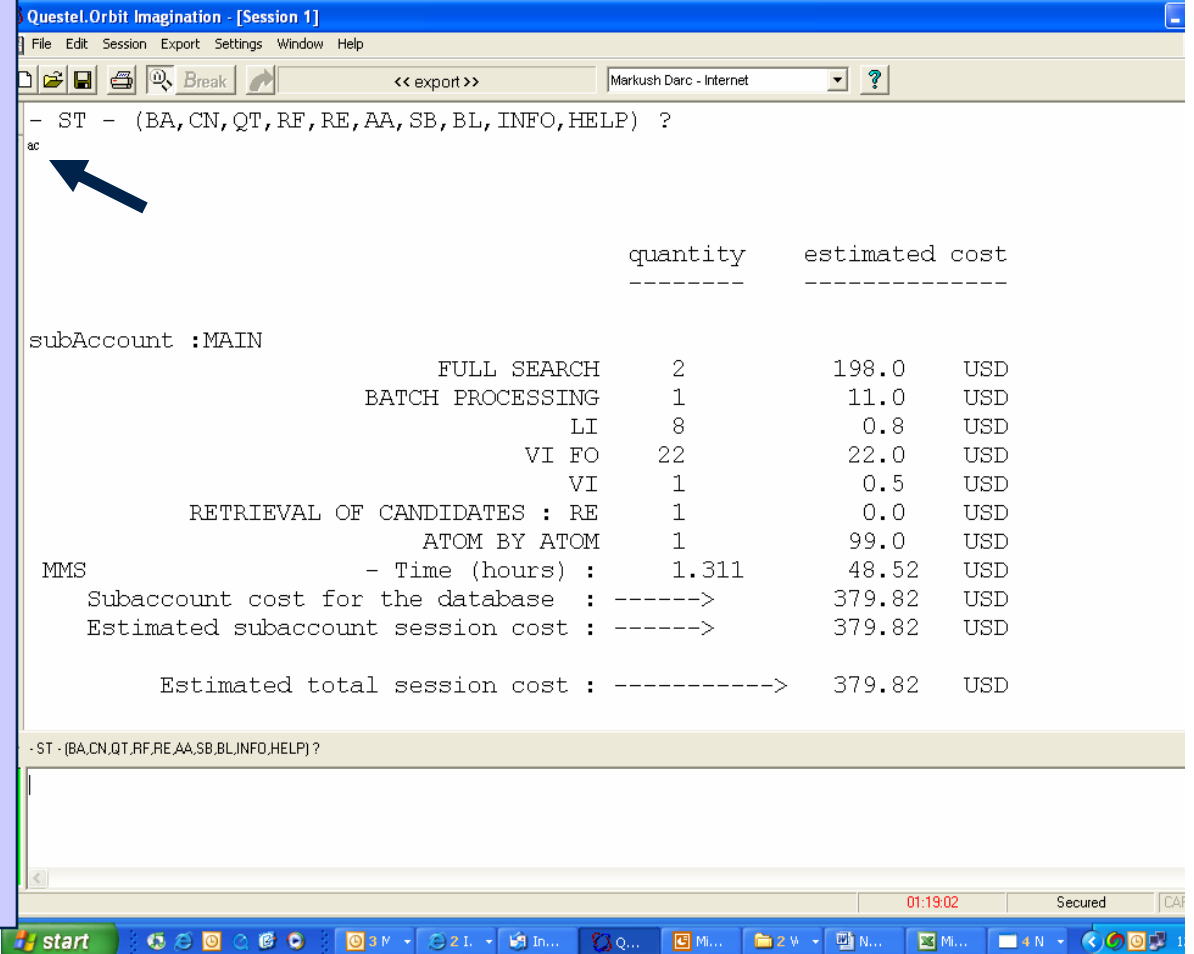
EXAMPLE:

SUBACCT PARKER

- **AC** – will give cost estimate anytime during a session

EXAMPLE

AC



Questel.Orbit Imagination - [Session 1]
File Edit Session Export Settings Window Help

Break << export >> Markush Darc - Internet ?

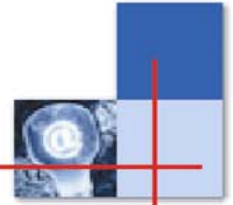
- ST - (BA, CN, QT, RF, RE, AA, SB, BL, INFO, HELP) ?
ac

	quantity	estimated cost	
	-----	-----	
subAccount :MAIN			
FULL SEARCH	2	198.0	USD
BATCH PROCESSING	1	11.0	USD
LI	8	0.8	USD
VI FO	22	22.0	USD
VI	1	0.5	USD
RETRIEVAL OF CANDIDATES : RE	1	0.0	USD
ATOM BY ATOM	1	99.0	USD
MMS - Time (hours) :	1.311	48.52	USD
Subaccount cost for the database :	----->	379.82	USD
Estimated subaccount session cost :	----->	379.82	USD
Estimated total session cost :	----->	379.82	USD

- ST - (BA,CN,QT,RF,RE,AA,SB,BL,INFO,HELP) ?

01:19:02 Secured

New Enhancements- Subset Searching



SUBSET SEARCHING

COMING SOON!

- **Price Reduction:**
 - AA search on up to 3000 candidates will soon be reduced to half price.
 - Subset searching is helpful for working with large AA answer sets

Tips and Tricks



- Roles can be applied to CN answer sets to narrow the focus of the set
- The following roles are used with CN lists in the bibliographic PHARM and DWPI files

A Substance analyzed/detected

C Catalyst

D Detecting agent

E Excipient

K Known Compound

M Component of mixture

N New Compound

P Known Compound Produced

Q Product defined by starting material

R Removing/purifying agent

S Starting material

T Therapeutically active agent or prodrug

U Use of a single compound

V Reagent

X Substance removed

Z Miscellaneous

Tips and Tricks



Search History – Limiting answer set by roles

File : DWPI

SS Results

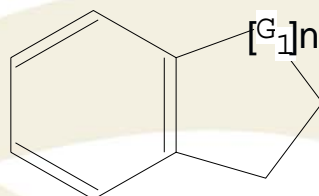
- | | | | |
|---|------|-----------------------|-----------------------------------|
| 1 | 1072 | *MD DSPECIFICS/CN | <= full set |
| 2 | 367 | *MD DSPECIFICS.N.T/CN | <= new and therapeutically active |
| 3 | 18 | *MD DSPECIFICS.A/CN | <= analyzed substances |

Roles can be useful for separating pharm compounds from compounds used with other technologies

Tips and Tricks



- **RING SIZE** – How do you search for different size cyclic compounds?



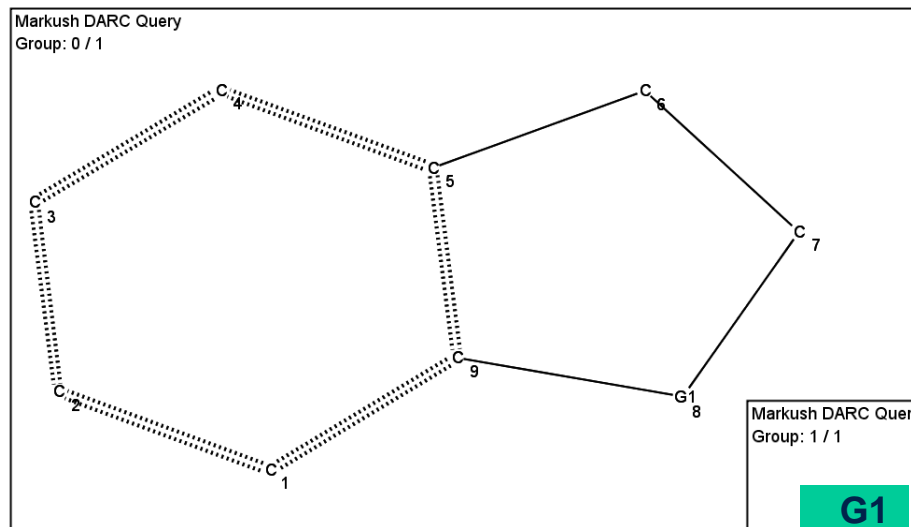
G1 = C, S, O, N
n = 1 – 3

- **Solution: Create a G group with different possibilities**

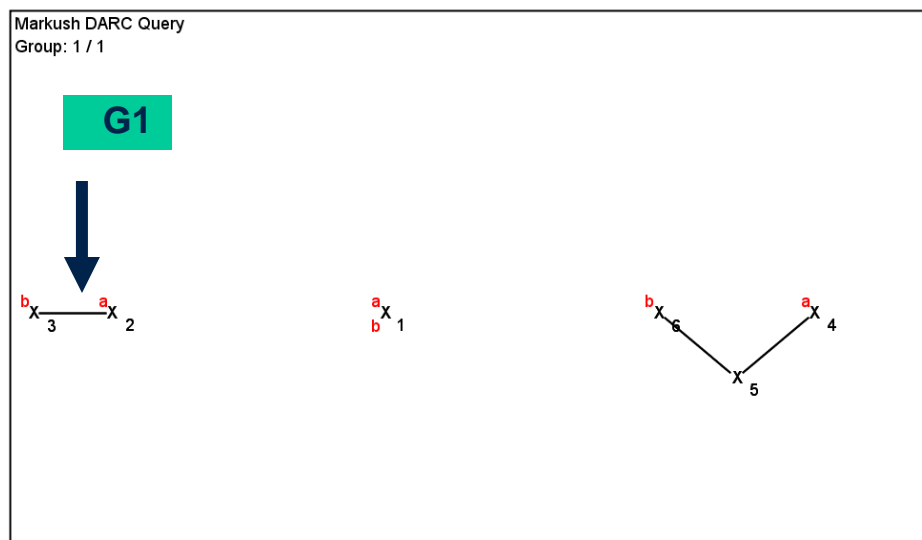
X (unspecified X atom to cover five-member ring)
X – X (six-member ring; cyclic unspecified bond)
X – X – X (seven-member ring; cyclic unspecified bonds)

TIP: Make sure you use cyclic bond characteristic; system will automatically assume acyclic because of chain

Tips and Tricks



Careful: Cyclic bonds are no longer indicated in viewer

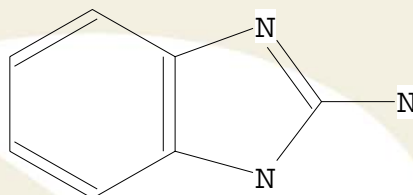


Tips and Tricks



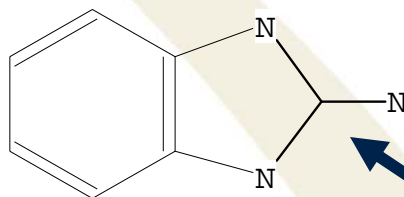
- **HETEROCYCLIC NITROGEN COMPOUNDS:** should you normalize bonds?

Example:



Benzimidazole drawn in Topfrag shows and creates codes for double bond in heterocycle

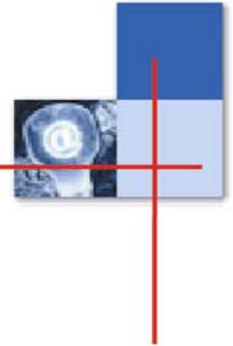
Solution:



“Normalized” bonds should be used because of tautomer N-C-N rule

“Unspecified” bonds are the safest to use.

Exporting Results



- **Imagination will export results in an RTF format.**
- **QWEB 2, our Internet interface, will export results from PHARM and DWPI into a XLS (Excel) spreadsheet format, as well as RTF, PDF, TXT, and XML formats**

Exporting Results



- Questel-Orbit allows for customized display formats
- Free format can be created using FOR command, with Derwent accession number, title (title terms for nonsubscribers), and compound numbers

```
FOR TICN AN TI CN
```

(TICN is the name of the custom format)

- Customized formats can be used in QWEB2 to create customized XLS tables.

Search statement 2

prt tich 1-10

QWEB 2

[Select All](#) | [Unselect All](#)

Available features ▼ ▲ ▼ ▲ □

1 / 47 DWPI - Derwent World Patents Index - ©The Thomson Corp.

2006-432910 [44] - New carbamate linked macrolide compounds, useful for treating systemic or top...

AN	2006-432910 [44]
TI	New carbamate linked macrolide compounds, useful for treating systemic or topical microbial infections
CN	0329-17501-N 0329-17501-P 0329-17502-N 0329-17502-P RAKIO0-N RAKIO0-P RAKIO1-N RAKIO1-P RAKIO2-N RAKIO2-P RAKIO3-N RAKIO3-P RAKIO4-N RAKIO4-P RAKIO5-N RAKIO5-P RAKIO6-N RAKIO6-P RAKIO7-N RAKIO7-P RAKIO8-N RAKIO8-P RAKIO9-N RAKIO9-P RAKIOA-N RAKIOA-P RAKIOB-N RAKIOB-P RAKIOC-N RAKIOC-P RAKIOD-N RAKIOD-P

Available features ▼ ▲ ▼ ▲ □

2 / 47 DWPI - Derwent World Patents Index - ©The Thomson Corp.

2006-353280 [36] - New macrolide compounds useful to treat or prevent systemic or topical microb...

AN	2006-353280 [36]
TI	New macrolide compounds useful to treat or prevent systemic or topical microbial infections, to combat microbial infection and to treat a variety of diseases caused by pathogenic microorganism
CN	RAMQGGK-N RAMQGGK-P RAMQGL-N RAMQGL-P RAMQGM-N RAMQGM-P RAMQGN-N RAMQGN-P RAMQGO-N RAMQGO-P RAMQGP-N RAMQGP-P RAMQGGQ-N RAMQGGQ-P RAMQGR-N RAMQGR-P RAMQGS-N RAMQGS-P RAMQGT-N RAMQGT-P RAMQGU-N RAMQGU-P RAMQGV-N RAMQGV-P RAMQGW-N RAMQGW-P RAMQGX-N RAMQGX-P RAMQGY-N RAMQGY-P RAMQGZ-N RAMQGZ-P RAMQH0-N RAMQH0-P RAMQH1-N RAMQH1-P RAMQH2-N RAMQH2-P RAMQH3-N RAMQH3-P RAMQH4-N RAMQH4-P RAMQH5-N RAMQH5-P RAMQH6-N RAMQH6-P RAMQH7-N RAMQH7-P RAMQH8-N RAMQH8-P RAMQH9-N RAMQH9-P RAMQHA-N RAMQHA-P RAMQHB-N RAMQHB-P RAMQHC-N RAMQHC-P RAMQHD-N RAMQHD-P RAMQHE-N RAMQHE-P RAMQHF-N RAMQHF-P RAMQHG-N RAMQHG-P RAMQHH-N RAMQHH-P RAMQHI-N RAMQHI-P RAMQHJ-N RAMQHJ-P RAMQHK-N RAMQHK-P RAMQHL-N RAMQHL-P RAMQHM-N RAMQHM-P RAMQHN-N RAMQHN-P RAMQHO-N RAMQHO-P RAMQHP-N RAMQHP-P RAMQHQ-N RAMQHQ-P RAMQHR-N RAMQHR-P 0326-99201-N 0326-99201-P 0326-99202-N 0326-99202-P 0326-99203-N 0326-99203-P

Available features ▼ ▲ ▼ ▲ □

3 / 47 DWPI - Derwent World Patents Index - ©The Thomson Corp.

2006-353279 [36] - New macrolone compounds used for treating systemic or topical microbial infec...

AN	2006-353279 [36]
TI	New macrolone compounds used for treating systemic or topical microbial infections

[Go](#)

Export

Template

Classical

File type: Text (.txt) ▼

With images

.tif ▼

- With p
- Text (.txt)
- Acrobat (.pdf)
- Word (.rtf)
- Excel compliant (.xls)**
- Full XML (.xml)

QWEB 2 Export

Delivery

Zipped file

by e-mail:

OK

Cancel

Done

Internet

Status

05:35

Title

A method for improving the ratio of PDE4 inhibitors through reduction or elimination of emetogenic properties while allowing retention of PDE activity, comprises benzylation to provide benzyated PDE4 inhibitor

IPC s

A61K-031/522 C07D-207/00 C07D-207/12 C07D-207/26 A61K-031/277 A61K-031/325 A61K-031/38 A61K-031/4015 A61K-031/4162 A61K-031/4166 A61K-031/44 A61K-031/513 A61K-031/52 C07C-255/46 C07C-271/60 C07D-213/75 C07D-233/32 C07D-239/10 C07D-473/02 C07D-473/04 C07D-473/06



Go

javascript:ExportPage('No selected document');

Internet

File Edit View Insert Format Tools Data Window Help

Type a question for help

Arial Unicode MS 10 B I U \$ % .00 .00

A1 AN

	A	B	C	D	E	F	G	H
1	AN	TI	CN					
	2006-432910 [44]	New carbamate linked macrolide compounds, useful for treating systemic or topical microbial infections	0329-17501-N 0329-17501-P 0329-17502-N 0329-17502-P RAKIO0-N RAKIO0-P RAKIO1-N RAKIO1-P RAKIO2-N RAKIO2-P RAKIO3-N RAKIO3-P RAKIO4-N RAKIO4-P RAKIO5-N RAKIO5-P RAKIO6-N RAKIO6-P RAKIO7-N RAKIO7-P RAKIO8-N RAKIO8-P RAKIO9-N RAKIO9-P RAKIOA-N RAKIOA-P RAKIOB-N RAKIOB-P RAKIOC-N RAKIOC-P RAKIOD-N RAKIOD-P					
2	2006-353280 [36]	New macrolide compounds useful to treat or prevent systemic or topical microbial infections, to combat microbial infection and to treat a variety of diseases caused by pathogenic microorganism	RAMQGK-N RAMQGK-P RAMQGL-N RAMQGL-P RAMQGM-N RAMQGM-P RAMQGN-N RAMQGN-P RAMQGO-N RAMQGO-P RAMQGP-N RAMQGP-P RAMQGQ-N RAMQGQ-P RAMQGR-N RAMQGR-P RAMQGS-N RAMQGS-P RAMQGT-N RAMQGT-P RAMQGU-N RAMQGU-P RAMQGV-N RAMQGV-P RAMQGW-N RAMQGW-P RAMQGX-N RAMQGX-P RAMQGY-N RAMQGY-P RAMQGZ-N RAMQGZ-P RAMQH0-N RAMQH0-P RAMQH1-N RAMQH1-P RAMQH2-N RAMQH2-P RAMQH3-N RAMQH3-P RAMQH4-N RAMQH4-P					

XLS file from QWEB 2; custom display

Excel example

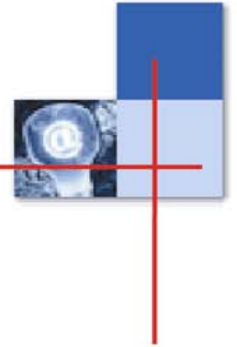
Draw AutoShapes

Ready

	A	B	C	D	E	F
1	AN 2001-625957 [72]	XA C2001-186448	DC B05	TI A method for improving the ratio of PDE4 inhibitors through reduction or elimination of emetogenic properties while allowing retention of PDE activity, comprises benzylation to provide benzylated PDE4 inhibitor	IC A61K-031/522 C07D-207/00 C07D-207/12 C07D-207/26 A61K-031/277 A61K-031/325 A61K-031/38 A61K-031/4015 A61K-031/4162 A61K-031/4166 A61K-031/44 A61K-031/513 A61K-031/52 C07C-255/46 C07C-271/60 C07D-213/75 C07D-233/32 C07D-239/10 C07D-473/02 C07D-473/04 C07D-473/06	MC CPI: B14-A02 B14-B02 B14-C03 B14-C09B B14-D03 B14-E08 B14-G02 B14-G02A B14-G02C B14-J01 B14-J01A1 B14-K01A B14-K01A1
2	2001-565282 [63]	C2001-167746	B02 B03	New pyridine derivatives, useful as angiogenesis and VEGF-receptor tyrosine kinase inhibitors for treating e.g. tumors	C07B-061/00 A61K-031/506 C07D-401/06 C07D-403/02 C07D-471/04 A61K-031/435 A61K-031/44 A61K-031/444 A61K-031/47	CPI: B06-H B07-H B14-D06 B14-F

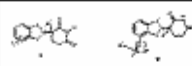
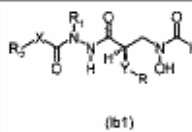
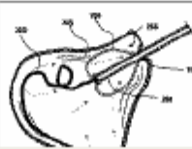
XLS file from QWEB 2; MAX display

Exporting Results

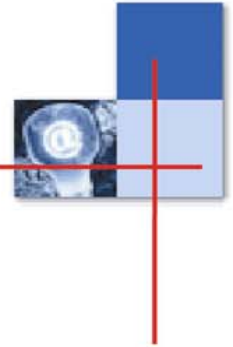


- **BIZINT Smartcharts software can still capture images from Derwent exports using QWEB 1 (still available)**
- **BIZINT also works with Derwent exports, from QWEB 2, Imagination, and STN Express (no images)**

Derwent World Patents Index: Untitled

	Title	Patent Assignee	Basic Patent Number	Derwent Class	Image	Abstract	Adva
14	Use of immunomodulatory compound to treat, manage or prevent immunodeficiency disease or disorder e.g. adenosine deaminase deficiency, antibody deficiency, ataxia-tenlangiectasia and bare lymphocyte syndrome	CELGENE CORP	WO 200660507	B02		WO200660507 A NOVELTY: Method of treating, managing or preventing an immunodeficiency disease or disorder, comprises administering to a management or prevention of immunomodulatory compound (A) or salt, solvate or stereoisomer and/or a second active agent (B). ACTIVITY: Anti-HIV. MECHANISM OF ACTION: Immunoglobulin inhibitor. The ability of (I) to inhibit immunoglobulin was tested using biological assays. The results showed that the median inhibitory concentration value of (I) was 0.1-0.3 mu M. [CONT.]	
BIZINT import from QWEB 1							
15	Treatment of a bacterial infection e.g. Streptococcus pneumoniae, Staphylococcus aureus involves administering a polypeptide deformylase inhibitor and a macrolide antibiotic	SMITHKLINE BEECHAM CORP	WO 200655663	B05		WO200655663 A NOVELTY: Treatment of a bacterial infection involves: administering a polypeptide deformylase (PDF) inhibitor (I) and a macrolide antibiotic (II), or their salt, solvate or derivative. DETAILED DESCRIPTION: An INDEPENDENT CLAIM is included for a pharmaceutical composition comprising: (I) and (II) or their salt, solvate or derivative. ACTIVITY: Antibacterial. [CONT.]	The co-adminis inhibitor with the antibiotic result: effect, with redu each of the corr presence of the concentrations: compounds rec the same anti-b effect.(Dwg.0/0)
	Drug delivery to regions within body for diagnoses or treatment of disorder of throat/nose, involves supplying therapeutic agent into reservoir during	ACCLARENT INC	US 20060106361	A96 B05 B07 D22 P34		US20060106361 A NOVELTY: A delivery tube (296) is inserted into a human/animal body. Therapeutic or diagnosis agent is supplied into the body.	The desired me substance/ager target anatomic within the set tir effective treatme

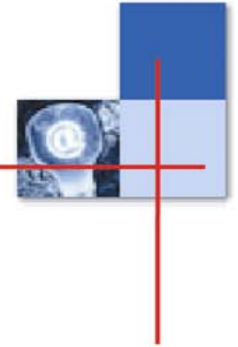
Contact Information



- **MMS Help Desk**
 - Tel: 800-634-9978 (US)
- **Questel Orbit Help Desk**
 - Tel: 800-456-7248 (US)
 - Tel: 8000-783-7835 (Europe)

Questel Orbit Home Page

WWW.QUESTEL.ORBIT.COM



Thank You!