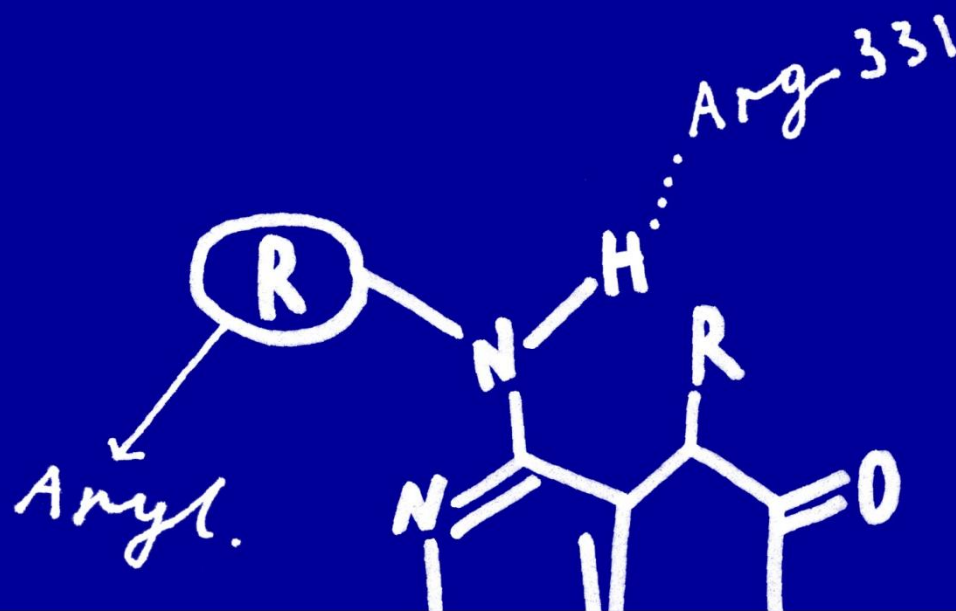
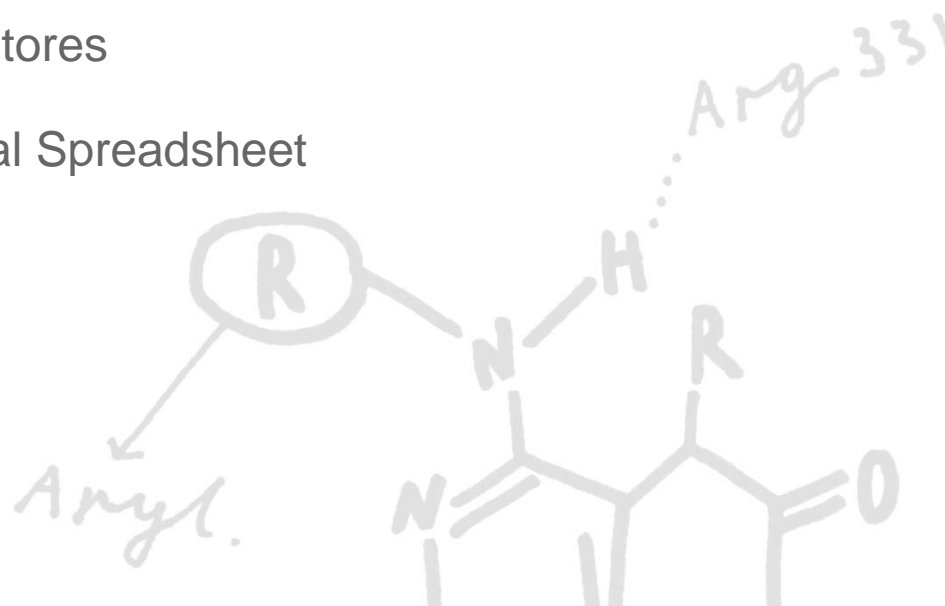


Migrating to ChemAxon



Agenda

- **Evotec**
- Why migrate ?
- Searching for Library Enumeration Replacement
- Migrating a small activity database
- Migrating Chemical Stores
- Using a new Chemical Spreadsheet
- Conclusion



Evotec's Mission

Partner of choice for drug discovery alliances

PEOPLE

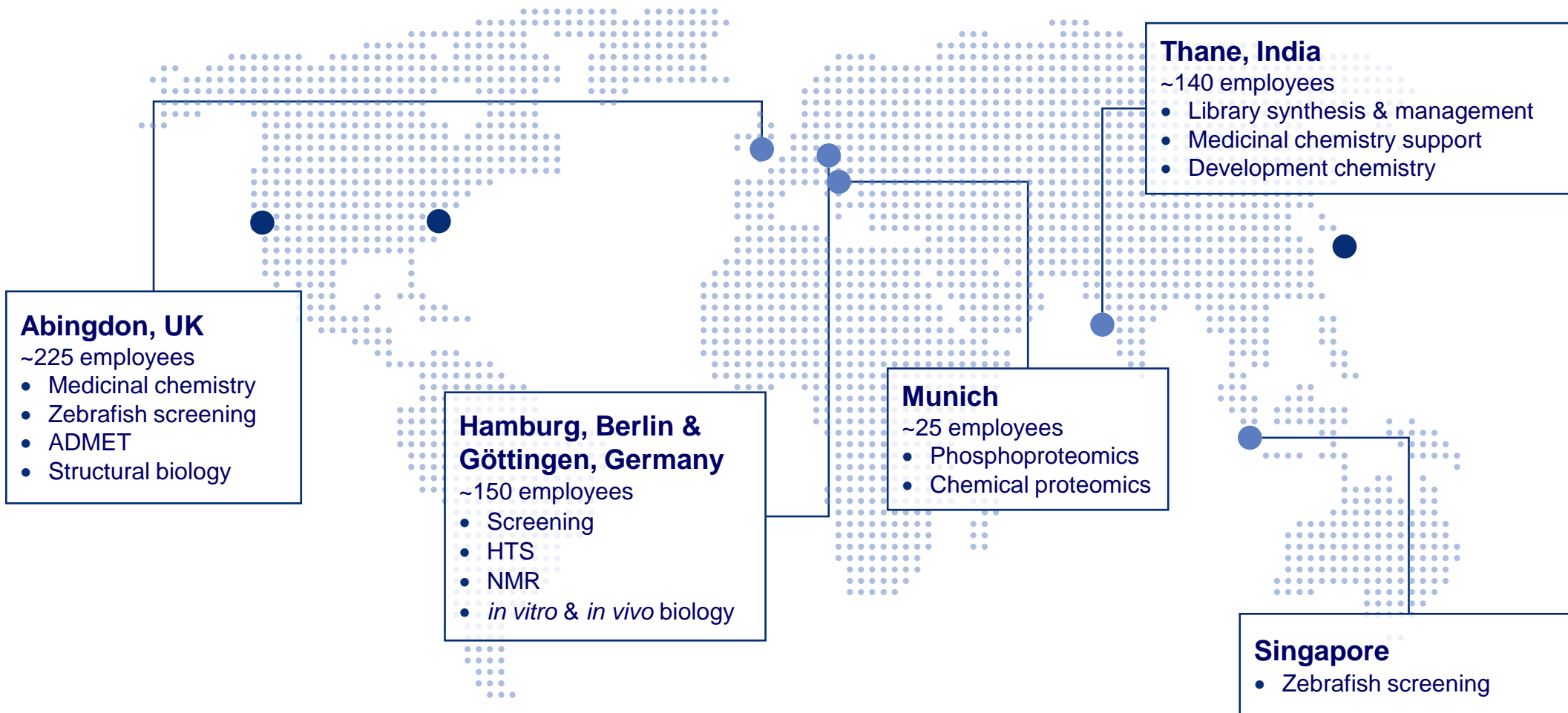
THERAPEUTIC AREA EXPERTISE

To build innovative and integrated drug discovery alliances to accelerate and maximise the success of our partner's drug discovery efforts by leveraging outstanding scientists, state-of-the-art integrated capabilities and therapeutic area expertise

INTEGRATED DRUG DISCOVERY PLATFORM

Global reach for global projects

Ca. 550 Evotec employees worldwide



- Sales representation (San Francisco, San Diego, Boston, Tokyo)
- Operations & sales representation

Building high value, integrated partnerships

From target to IND

Target ID & validation	Screening	Hit-to-lead	Lead optimisation	Preclinical development	Clinical development
<ul style="list-style-type: none"> Molecular biology and cloning Bioinformatics <i>In vitro</i> target validation <i>In vivo</i> target validation 	<ul style="list-style-type: none"> Assay development & screening (u)HTS High content screening Electrophysiology <i>In silico</i> screening technologies Fragment-based drug discovery 	<ul style="list-style-type: none"> Medicinal chemistry Hit expansion Library design High throughput chemistry Target deconvolution Protein-ligand crystallography <i>In vitro</i> biology Early ADMET 	<ul style="list-style-type: none"> Medicinal chemistry <i>In vitro</i> biology Disease biology and target class expertise Cellular selectivity analysis Cellular MoA analysis Computational chemistry and structure-based drug design <i>In silico</i> ADMET 	<ul style="list-style-type: none"> Custom synthesis Analytical development Process R&D Large scale synthesis <i>In vivo</i> pharmacology Biomarker discovery 	<ul style="list-style-type: none"> Clinical alliances Clinical project management



Superior drug candidates in a time and cost efficient manner

For example:

- 1 CNS 
- 2 Oncology 
- 3 Inflammation
- 4 Pain 
- 5 Metabolic diseases 
- 6 Huntington's disease 

Disease biology expertise

- CNS
- Inflammation
- Pain
- Oncology
- Metabolic Diseases

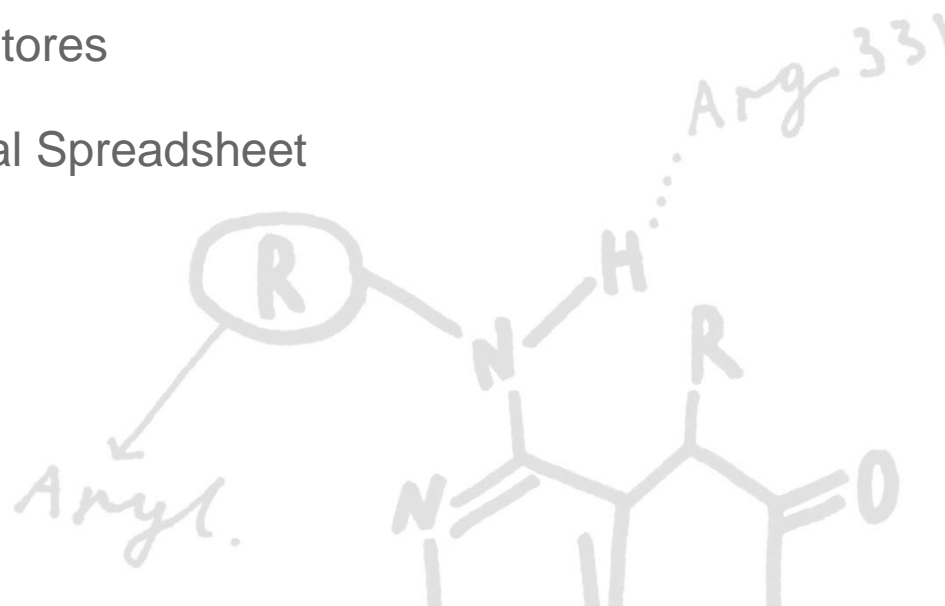
Proven program management

- 320 assays developed
- >110 hit to lead and lead optimisation projects
- 28 PDCs
- 20 compounds approved for clinical trials

Flexible deal structures

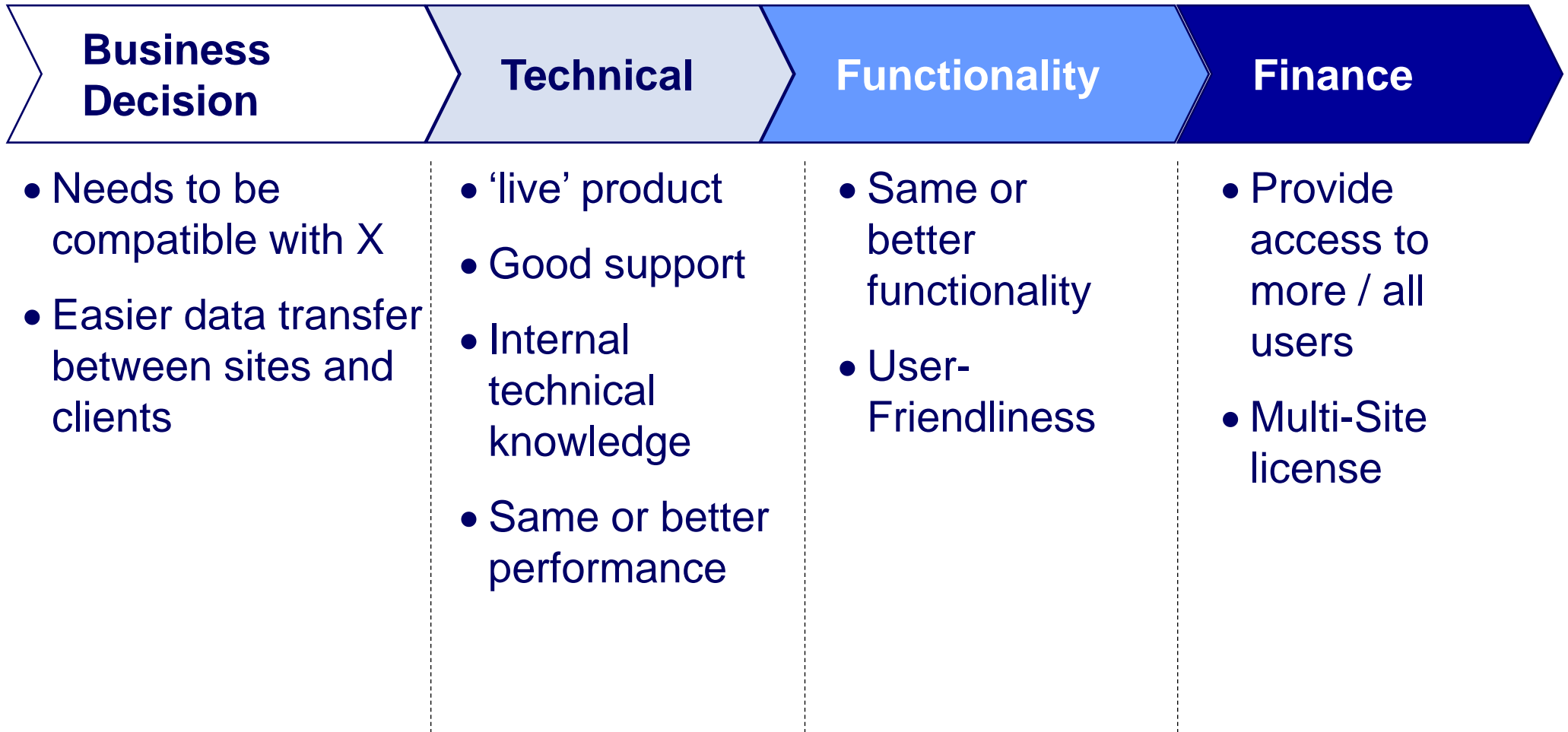
Agenda

- Evotec
- **Why migrate ?**
- Searching for Library Enumeration Replacement
- Migrating a small activity database
- Migrating Chemical Stores
- Using a new Chemical Spreadsheet
- Conclusion



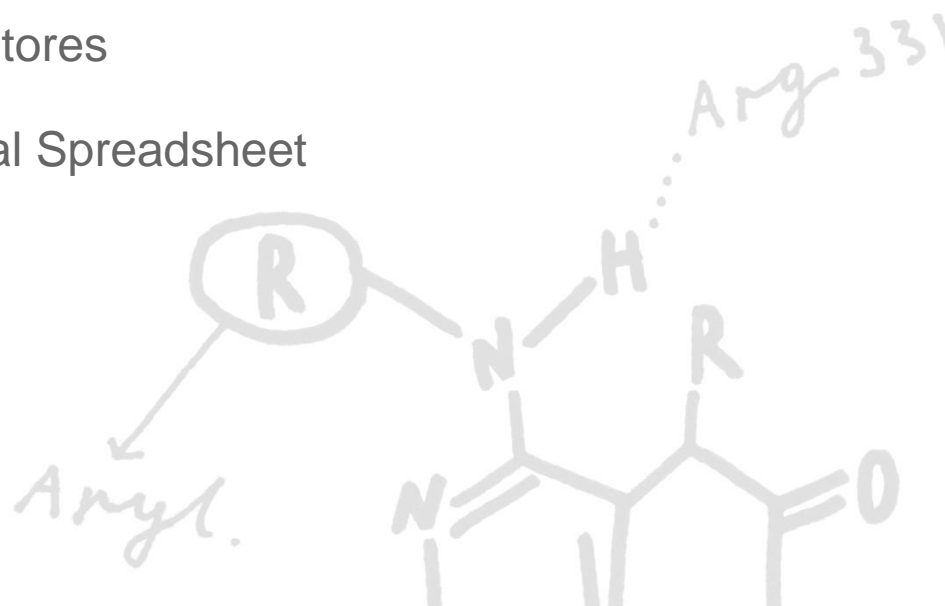
Why migrate ?

How is the decision made ?



Agenda

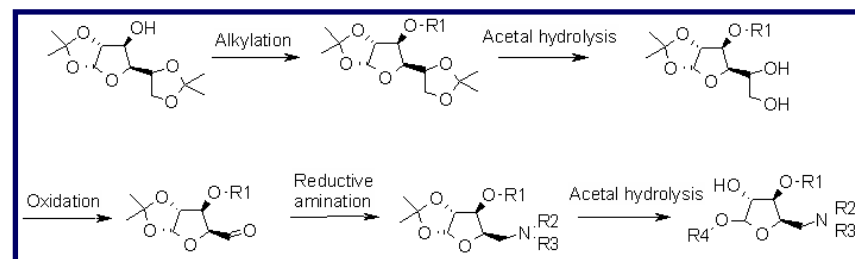
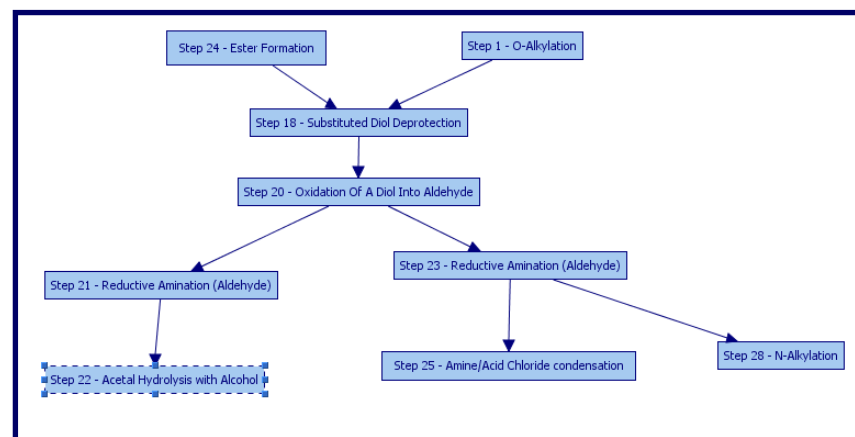
- Evotec
- Why migrate ?
- **Searching for Library Enumeration Replacement**
- Migrating a small activity database
- Migrating Chemical Stores
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Searching for a Library Enumeration Replacement?

Essential Required Features

- User-friendly
- Produces Product Identifier
- Speed
- Multi-Step Libraries
- Enumerate up to 1 million structures
- Chirality support



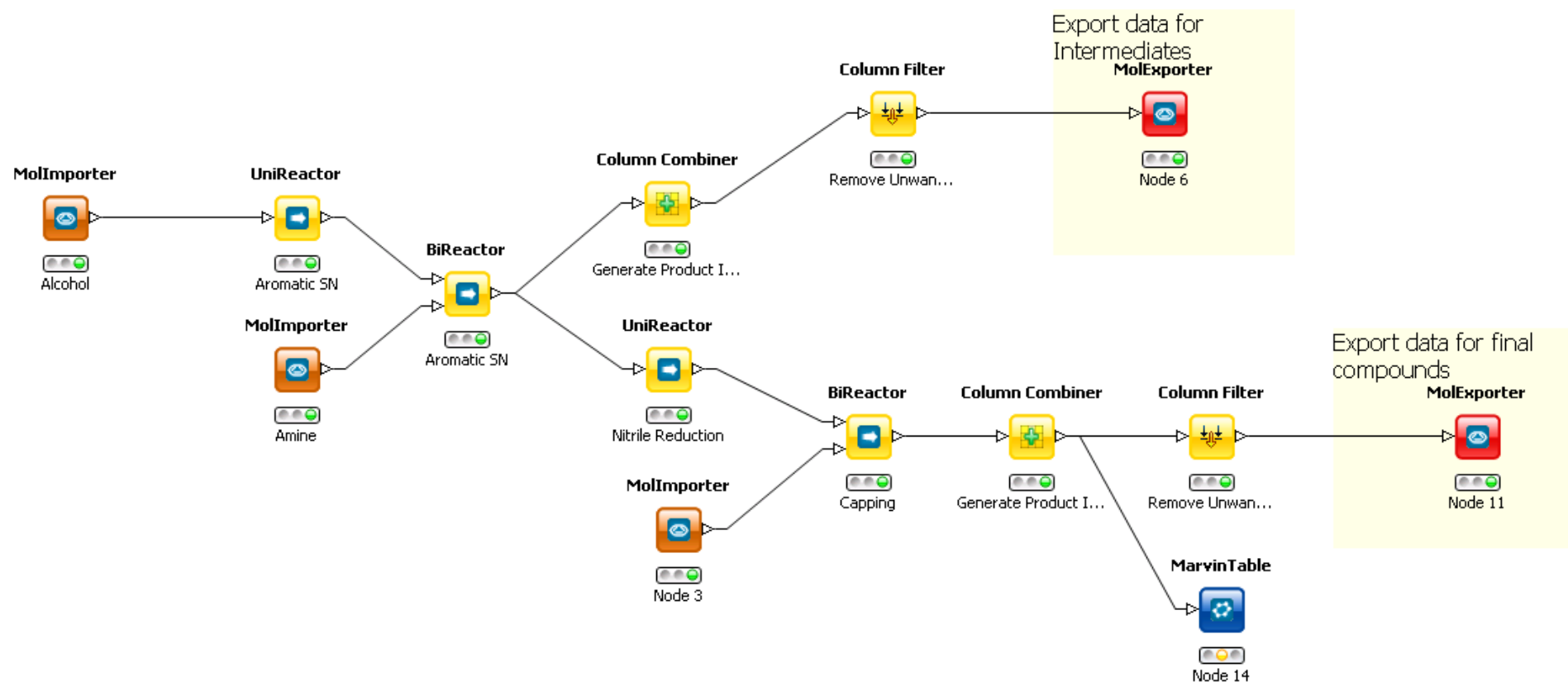
Searching for a Library Enumeration Replacement ?

What options did we consider ?

Feature	Existing Solution	Evotec CCD	Reactor GUI	Reactor cmd line	IJC	Knime / Infocom
User-Friendly	OK	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	OK	<input checked="" type="checkbox"/>
Speed	<input checked="" type="checkbox"/>	OK	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	OK	<input checked="" type="checkbox"/>
Product Identifier	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (available in latest version)	<input checked="" type="checkbox"/> (static format)	<input checked="" type="checkbox"/> (available in version 5.5)	<input checked="" type="checkbox"/> (flexible format)
Up to 1M	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Not tested	<input checked="" type="checkbox"/>
Multi-Step	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Library Enumeration Tool selected

Knime and the Infocom ChemAxon nodes



Library Enumeration Tool selected

Knime and the Infocom ChemAxon nodes

Dialog - 0:8 - BiReactor (Capping)

File


Options | Reactor Options | Advanced | Flow Variables | Memory Policy

Reaction file

S:\eScience\Shared\Training\KNIME\enumeration demo\step4.mrv Brows...

1. Unnamed

Reverse direction



Structure column

The reactant 1 column Product molecule1 (#2)

Keep properties of reactant 1

The reactant 2 column Molecule

Keep properties of reactant 2

OK Apply Cancel

Dialog - 0:10 - Column Combiner (Generate Product Identifier)

File

Settings | Flow Variables | Memory Policy

Delimiter -

Quote Character Quote always

Replace Delimiter by

Name of appended column Product Identifier

Exclude

Column(s): Search

Select all search hits

- Product molecule1 (#2)
- Product molecule1 (#1)
- Product molecule1
- Molecule
- Molecule (#1)
- Molecule (#2)
- Product molecule1 (#3)

Select

add >>

add all >>

<< remove

<< remove all

Include

Column(s): Search

Select all search hits

- BB Code
- BB Code (#1)
- BB Code (#2)

OK Apply Cancel

Library Enumeration Tool selected

Temporary Storage Solution for the Libraries

1 Structure and Text Searching

2 Easy to Import and Export Data

3 Data can be edited easily based on the Product Identifier

4 Centralised, multi-user access

**Instant JChem
Shared Project
Oracle Database**

Library Enumeration Solution

Migration & Implementation

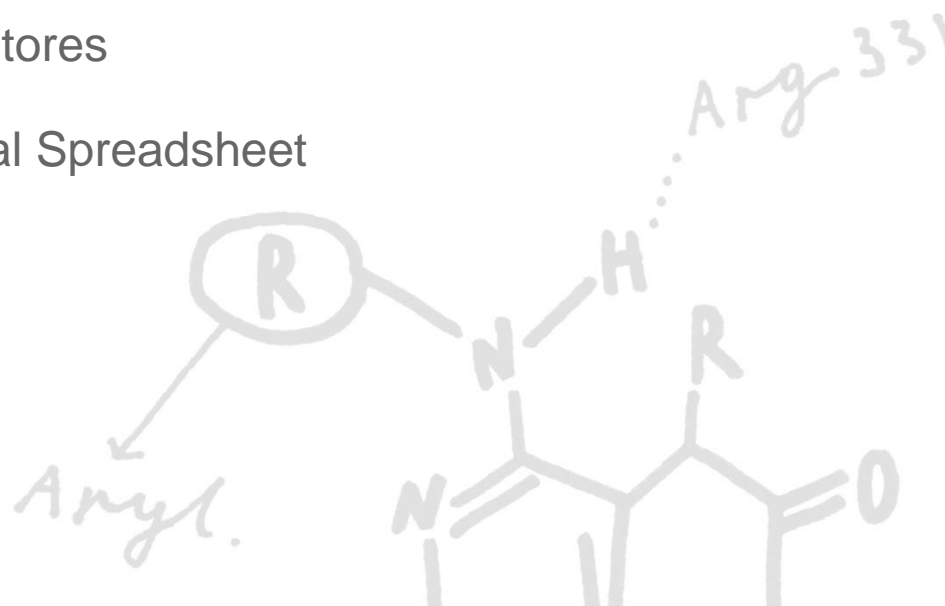
- Exported data from previous system as SD File (one for each Library)
- Imported data into Instant JChem (a separate table for each Library)
- Process has been streamlined
- One main user of the system (in India)

Summary

- Smooth transition
- Data stored as Smiles (not an encrypted / vendor specific format)
- Easy to trouble-shoot enumeration failures either in Knime or InstantJChem
- Need to remember to map the reactions for enumeration
- Database server is located in Abingdon (a bit too slow for use from India), hopefully will be moved locally soon !

Agenda

- Evotec
- Why migrate ?
- Searching for Library Enumeration Replacement
- **Migrating a small activity database**
- Migrating Chemical Stores
- Using a new Chemical Spreadsheet
- Conclusion



Migrating a small activity database

From local ISIS Base

Pro

- Nice forms
- Options to save Import /Export settings
- Option to query the database using ISIS 4 Excel

Contra

- Only one user at a time
- Database often became corrupt
- Limited licenses
- Design was not very flexible

Migrating a small activity database

IJC Solution

- First used in 2008 for an integrated project across several sites
- Shared Instant Jchem project
 - Oracle database
 - JChem cartridge/JChem base tables
- User-friendly
- Most of the features needed are present
- Bonus – access to calculators
- Knime workflows are used for more complicated export and data conversion

Summary

- Currently the preferred tool for chemistry and biology project databases

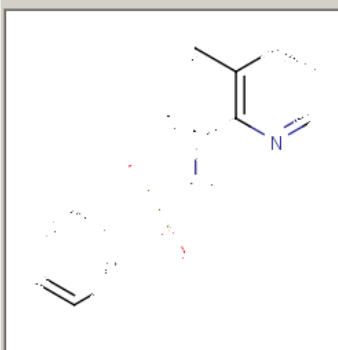
Migrating a small activity database

Example IJC Solution

Overview, ADMET Assay details, In Silico, Assay details

Design Query Browse Entity: all_struct...

Structure



CorpID:

NotebookNo: EV0865-010-006

PlateID: OP-292888

Well: A06

Date: 04-Mar-2010

Mol Weight:

Formula:

FreeMW:

Salt_Weight:

Salt_Fomula:

salname:

saltcount:

NMR:

LCMS: y

Purity: 100

Supplier: ChemBridge

Cat_no:

Comment:

Series: Cluster 9

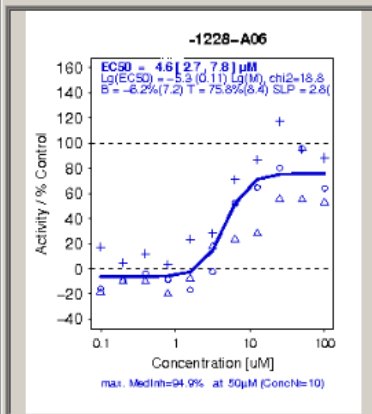
assays_opera

...	Plate	Well_ID	LNB	FPN date	Test_Date_reported
1	OP-292888	A06	EV0865-010-006		

Ferroportin assay

...	op	IC50 [µM]	comment	op	retest 1	comment	op	retest 2	comment	op	retest 3	comment
1		4.59	efficacy 82%									

Ferroportin assay IC50 test 1



Ferroportin assay IC50 test 1 link to image

...	Fpn R0 Mfluo Pngchart	Link public 2 CRC MFLUO R0
1	Fpn.MembFluo-Batch20-100311_VIT-1228-A06.png	file:///\\ge-ham-ora14\IJC_SHARED\vifor_images\Fp

Ferroportin ligand efficiency -RT ln(IC50)/NHA

...	LE	retest 1 LE	retest 2 LE
1	0.38		

MDCK ATP

...	op	IC50	op	retest
1		123.90		

HEK ATP

...	op	IC50	op	retest
1	>	100.00		

Transferrin counter assay

...	op	IC50 [µM]	op	retest
1				

Ferritin counter assay

...	op	IC50
1		

Cytotox HEK cells

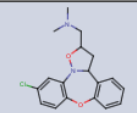
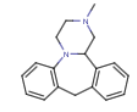
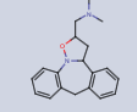
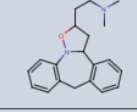
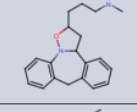
...	op	IC50 [µM]	comment
1			

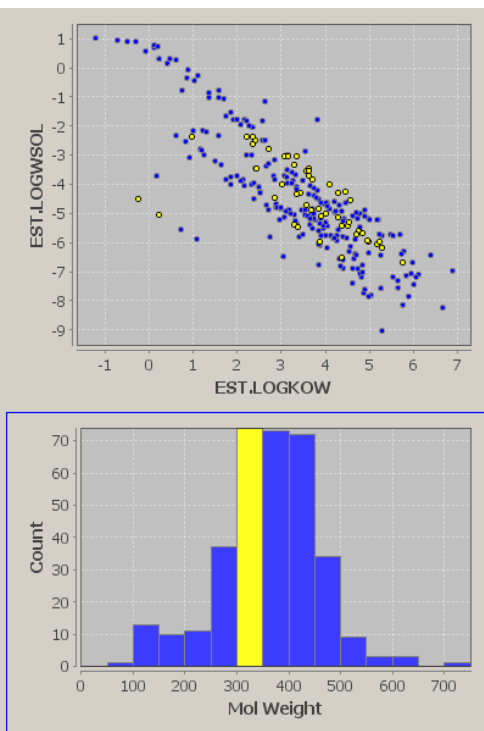
Migrating small activity database

What is next ?

- Planning to migrate the few remaining ISIS databases to IJC in 2011
- Currently running IJC version 5.3.1
- Users are looking forward to all the new features available in 5.5!

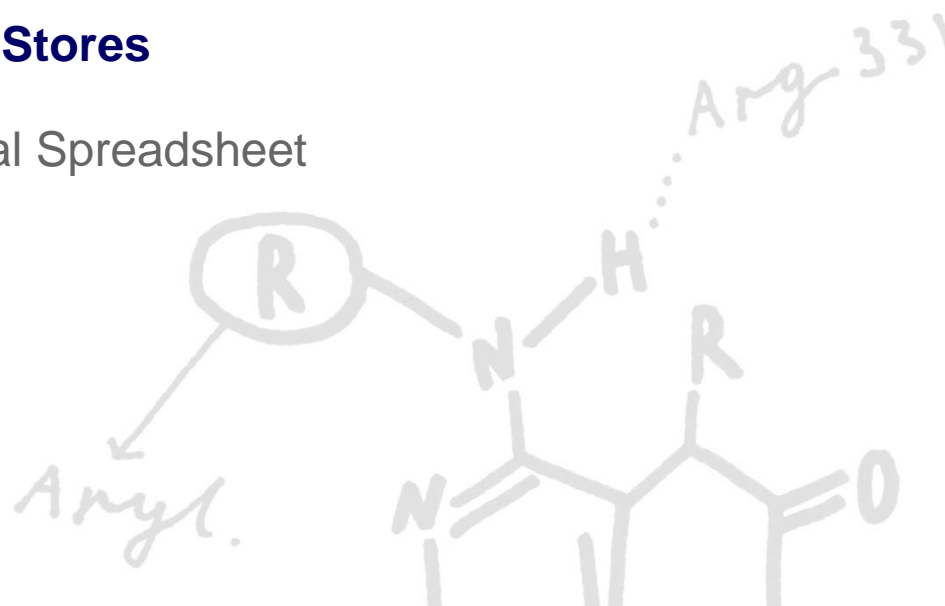
Wombat structures

...	Structure	CdId	SMDL.IDX
1			1 SMDL-00000470
2			2 SMDL-00000471
3			3 SMDL-00000472
4			4 SMDL-00000473
5			5 SMDL-00000474



Agenda

- Evotec
- Why migrate ?
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- Migrating a small activity database
- **Migrating Chemical Stores**
- Using a new Chemical Spreadsheet
- Conclusion



Migrating Chemical Stores data

Comparison of the Options

Feature	Commercial Inventory Software	EVOsource /ERP System
User-Friendly	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Integrated Ordering	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Integrated Quote System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Supplier Catalogue Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Identify each Compound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Identify Each bottle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Locate each bottle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (only when in stores)

Migrating Chemical Stores data

What was the process ?

- How much data needs to be migrated?
 - Ca. 10k bottles, 4k structures
- Exporting data from the current Chemical Stores Application
 - Did not work
 - Could not export shelf location
 - Could export quantity, but not unit
- Exporting data directly from the database
 - Structures encrypted, finally found cartridge functions to convert!
 - Understanding the data model was not too bad
 - Exported selected data from selected tables
 - Created scripts (PL/SQL) to migrate stores stock data into Finance system
 - Discovered about 3k bottles with Lab location – Really ??? Massive stores return requested !!!



Migrating Chemical Stores data

Potential Issues

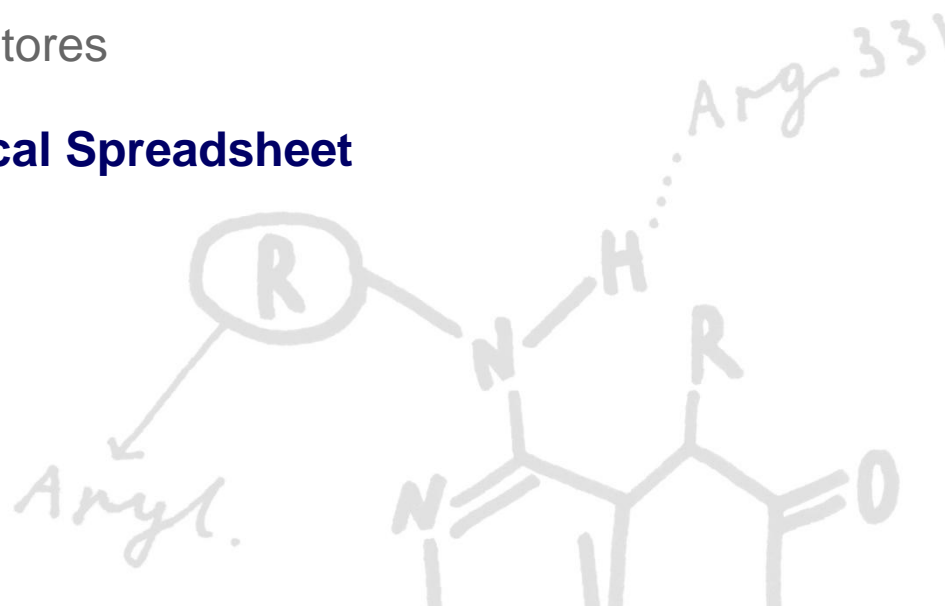
- Compound Identifiers will replace bottle identifiers
- Scientists attached to Numbers e.g. '10125' = benzoyl chloride
- Some functionality loss
 - EVOsource will need to be extended to allow tracking of Compounds in the Lab
- Some functionality gained
 - Access to more catalogue data
 - Integrated ordering and quote system

Summary

- Will the benefits outweigh the functionality loss ?

Agenda

- Evotec
- Why migrate ?
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- Migrating a small activity database
- Migrating Chemical Stores
- **Using a new Chemical Spreadsheet**
- Conclusion



Using a new Chemical Spreadsheet

Comparison of Tools

Feature	Software A (UK)	Software B (India)	JChem4XL
Licensed to all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Plug-Ins	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (limited by number per day)	<input checked="" type="checkbox"/>
Import/Export SD File	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SMILES Support	OK (problems with chirality)	??	<input checked="" type="checkbox"/>
Conversion to Images	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Copy to Report	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (Not always nice)

Migrating to JChem4XI

What the users like

- Be able to send the spreadsheet to another site and they can see and copy/paste active structures
- Be able to send structures as 'Images' to Clients who do not have chemical spreadsheet tools
- Be able to calculate all the properties using the JChem4XL functions
- Be able to use R Group decomposition, and do simple enumerations

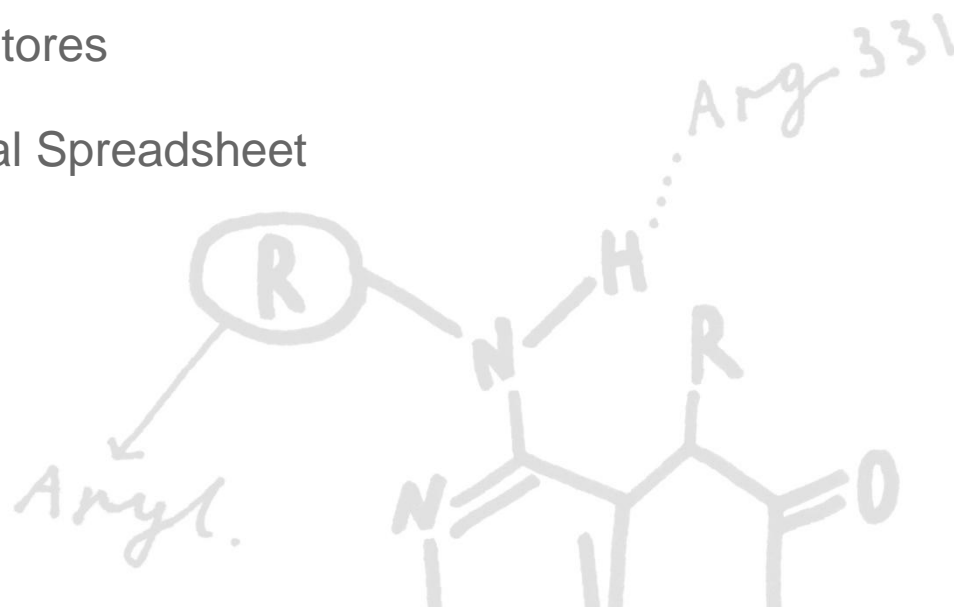
Migrating to JChem4XI

What are the users moaning about ?

- I have been using Software A for 20 years...
- I Don't know how to use Marvin
- It does not look pretty when I copy/paste to my report or PowerPoint slide
- It is an extra click to do this.....
- My structures are disappearing
- Difficulty in installing/ upgrading
 - Application tested in the department with sometimes extra spreadsheet tools installed
 - Test Installation and upgrades on 6 PCs
 - Why does it all go wrong on a scientist 's desktop ?
- Thanks for all the support we have received from ChemAxon !

Agenda

- Evotec
- Why migrate ?
- Searching for Library Enumeration Replacement
- Migrating from ISIS Local database to IJC
- Migrating Chemical Stores
- Using a new Chemical Spreadsheet
- **Conclusion**



What makes migration easier ?

How to convince users ?

- Small team of friendly scientists
- Computer Literate
- Equivalent or better functionality
- Always keen if the new software is going to facilitate their daily tasks
- Process changes are limited
- Selective 'Memory Loss' from users

Your contact:

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Senior Application Developer 1

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