



*Confidential*



Shanghai Haoyuan Chemexpress Co., Ltd.

(2006.09--)

<http://www.chemexpress.com.cn>



*Core team of Company*



Gao Qiang 1973

*Lanzhou Univ Master*

*HKU PhD*



Zheng Baofu 1979

*Nankai Univ*

*HKU PhD*



Li Shuoliang 1977

*Lanzhou Univ Master*

*HKU PhD*

*Novartis Scientist*





*ChemExpress your discovery*

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## *Our Business*

- Catalog Chemicals for Discovery Support
  1. Chemical intermediates and building blocks
  2. Reference compounds for research and new drug development.
- Custom Synthesis

Grams to Kgs; Lab scale to pilot scale-up.
- Contract and Custom Manufacturing

Kilogram scale to full commercial manufacturing
- APIs and API Intermediates manufacturing



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## *Our Service-----*

- Synthetic process development.
- Cost and yield improvement
- Custom Manufacturing from gram to Kilograms and commercial Scales
- Lab scale sample, comparator API and impurity preparations
- MOA development and validation
- GMP documentation



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- Our Research Laboratories in **Shanghai**



**3800 m<sup>2</sup>.; 90 chemists, (6 PhD, 40 MS).**

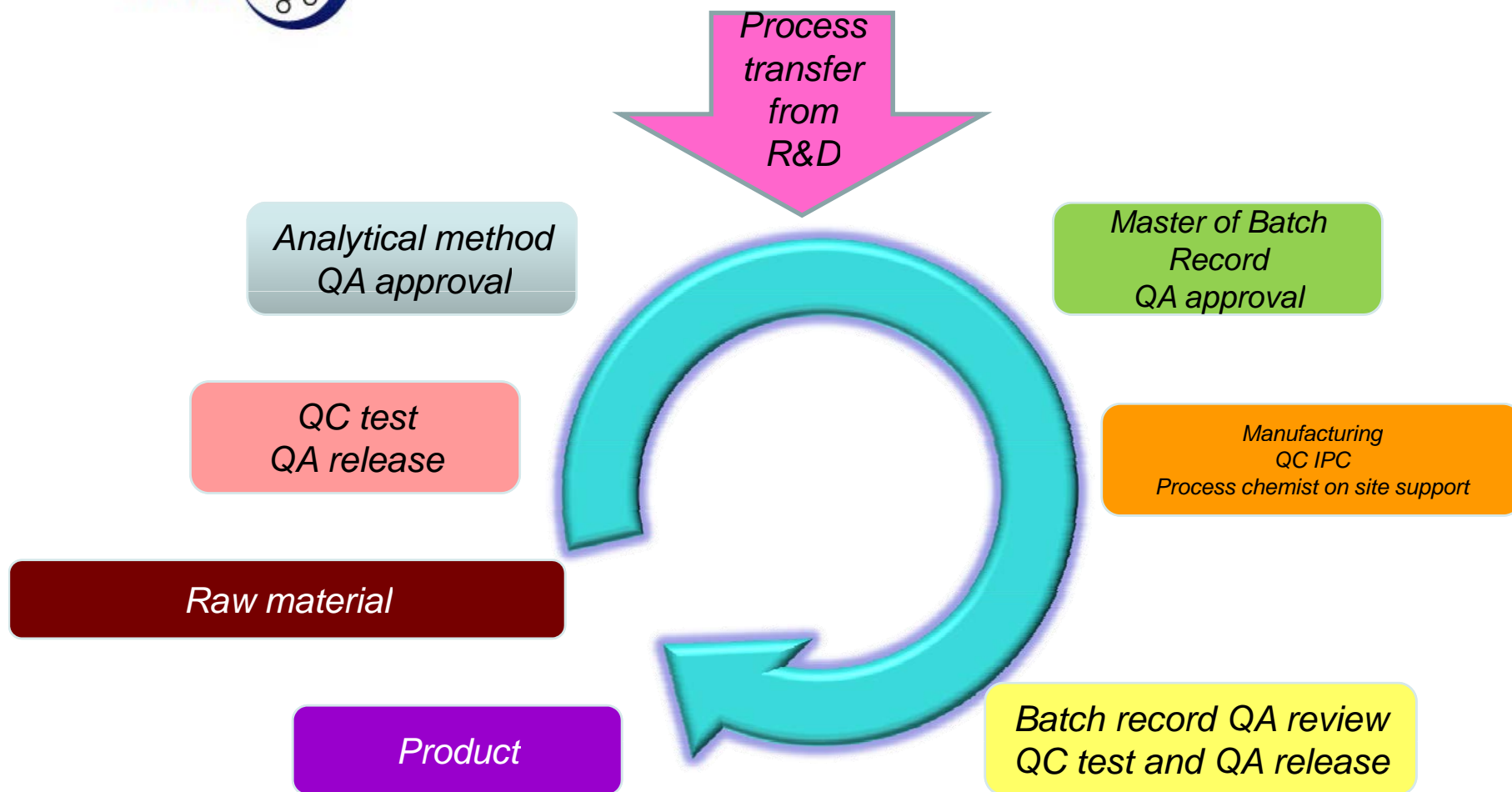
**Supported by LC-MS(2), HPLC(10), GC(2), Prep-HPLC(4), IR (NMR,GC-MS)**





# Chemexpress Location---Zhangjiang Pharma Valley







- Our manufactory plant--- Dazhan (Shandong ) 2007



Glass reactors: 20L-100L

Stainless-steel reactors:100L-1500L

Ceramic reactors: 300L-5000L

Autoclaves: 30L-300L

DCS controlled workshop

Total Reactor volume: 100 cubic meter

Temperature range: -80 °C to 200 °C

Press: up to 600 psi

Vacuum System: 1mmHg



- The Cooperation plant---Weifang Pharm 2015
- (FDA & COS&TGA approved GMP Plant)



Stainless-steel reactors:50L-1000L

Ceramic reactors: 200L-2000L

Temperature range: -80 °C to 300 °C

Vacuum System: 1mmHg

Total reactor volume: 20M3



- The Cooperation plant---Pu'an Pharm (Gansu) 2013
- (SFDA approved GMP Plant&COS)



Stainless-steel reactors:50L-1000L

Ceramic reactors: 50L-3000L

Autoclaves: 50L-300L

Temperature range: -80 °C to 300 °C

Press: up to 600 psi

Vacuum System: 1mmHg

Total reactor volume: 20M3





- Our manufactory plant--- Jiaxing Chemexpress 2016



High potency API intermediate production area

Steroidal API intermediate production area

Anti-tumor API intermediate production area

Intermediate production area

Reactors:1L-200L

The main products output: 100g-50kg/year

R&D area: 1250 m<sup>2</sup>

The production area: 1750 m<sup>2</sup>



## ***Selected Customers of Chemexpress***

Chemical Intermediates  
Building Blocks  
Reference compounds

Major Pharmaceutical Companies  
Research Institute and Universities

Contract and Custom  
Manufacturing

Abbott,  
Merck,  
Takeda etc

APIs Intermediates Manufacturing

Generic drug producer in USA,  
Europe and India  
(Teva, Sun, Sandoz, Egis etc)  
Pharma company in China

Process Scheme Optimization  
Technical Transportation

USA Pharma company  
Customers in China







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***Experienced Special Process Skills in the Plant:***

- Ability to use pyrophoric chemicals  
LAH, NaH, L-selectride, DIBAL-H, etc
- Ability to use water or air sensitive chemicals  
Grignard reagents, Borane reagents, lithium reagents

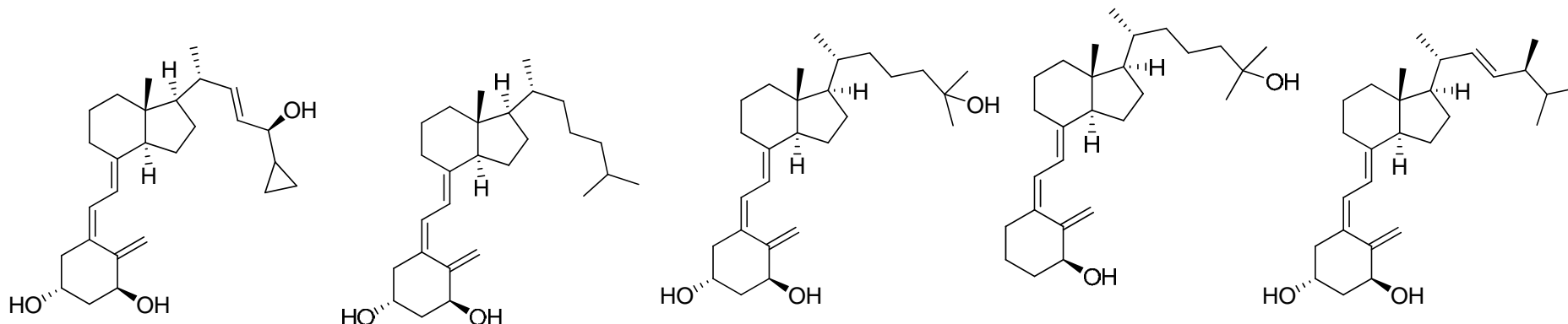


***Special Process Reaction Types:***

- Chiral induction
- Photolysis
- Ozonolysis
- Chiral resolution by salt formation
- Chiral resolution by enzyme
- Metal catalyzed coupling reactions



• Our Products ---Vitamin D series Analogs



Calcipotriol

CAS : 112965-21-6

Alfacalcitol

CAS : 41294-56-8

Calcitriol

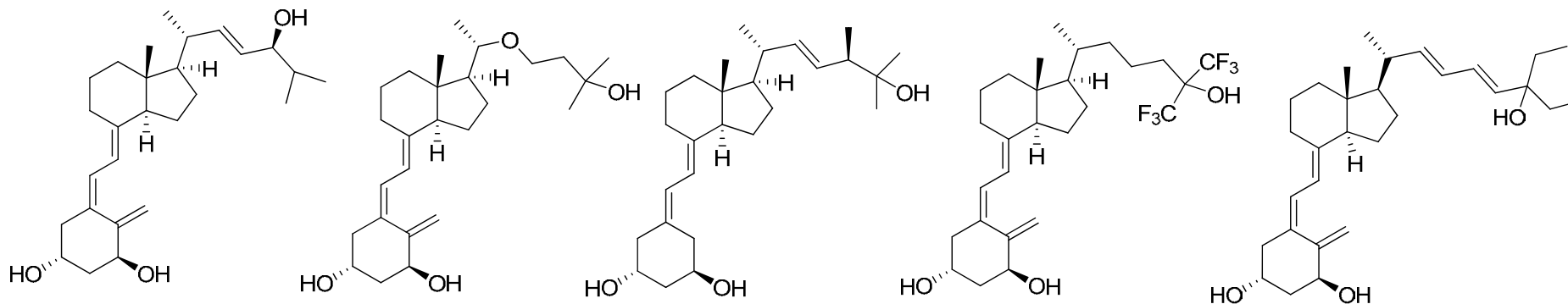
CAS : 32222-06-3

Calcifediol

CAS: 63283-36-3

Doxercalciferol

CAS:54573-75-0



\*Tacalcitol  
57333-96-7

\*Maxacalcitol  
103909-75-7

\*Paricalcitol  
131918-61-1

Falcacalcitriol  
83805-11-2

Seocalcitol  
134404-52-7





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- Intermediates for APIs with DMF Tech-package from 1kg—500kg (2009)

Gemcitabine hydrochloride

Decitabine

Fiacitabine

Fludarabine Phosphate

Lenalidomide

Rotigotine

Cinacalnet

Ramelteon

Bosentan

Eletriptan

Darifenacin

Solifenacin

Cevimeline

Varenicline

Bepotastine besilate

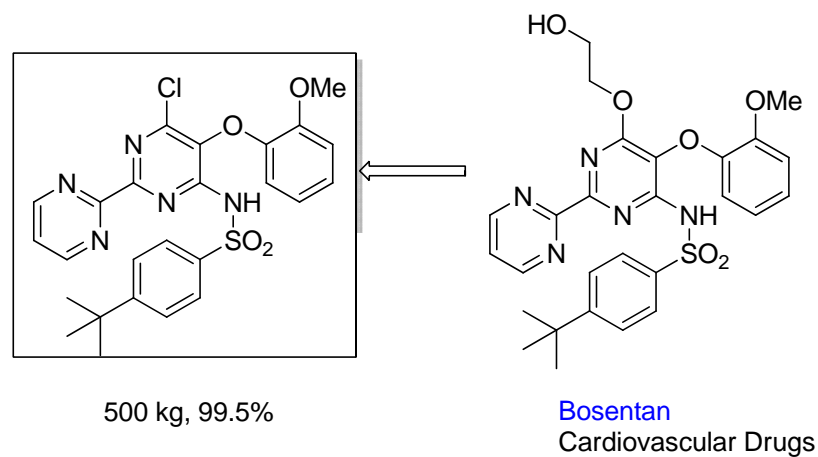
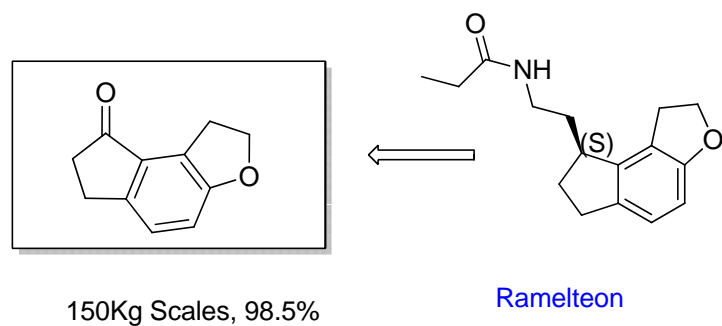
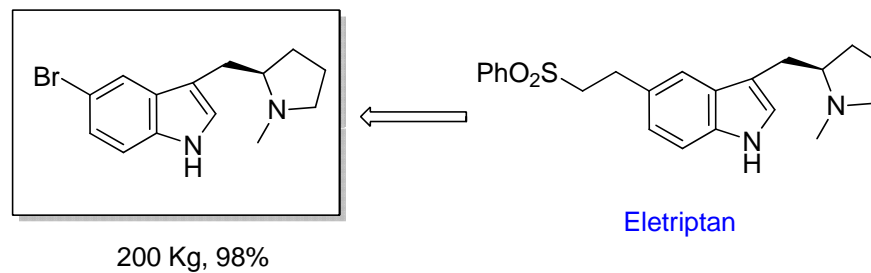
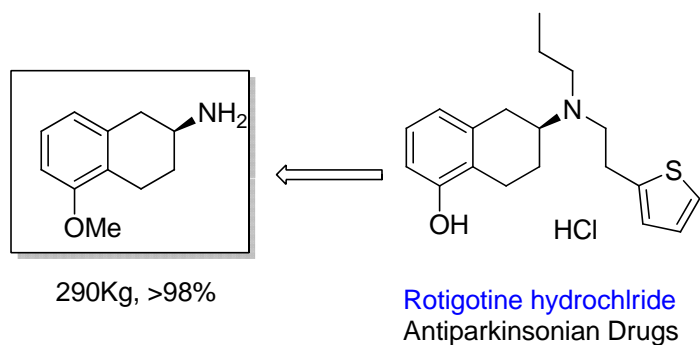
Setiptiline Maleate



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- Examples of API intermediates with TDP (2009)







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- Intermediates for APIs with DMF Tech-package from 1kg—500kg (2010)

Alosetron hydrochloride

Alvimopan

Apixaban

Asenapine

Conivaptan

Dronedarone

Fesoterodine

Lacosamide

Laropiprant

Paliperidone

Palonosetron

Rivaroxaban

Safinamide mesylate

Silodosin

Sitaxentan Sodium

Tapentadol

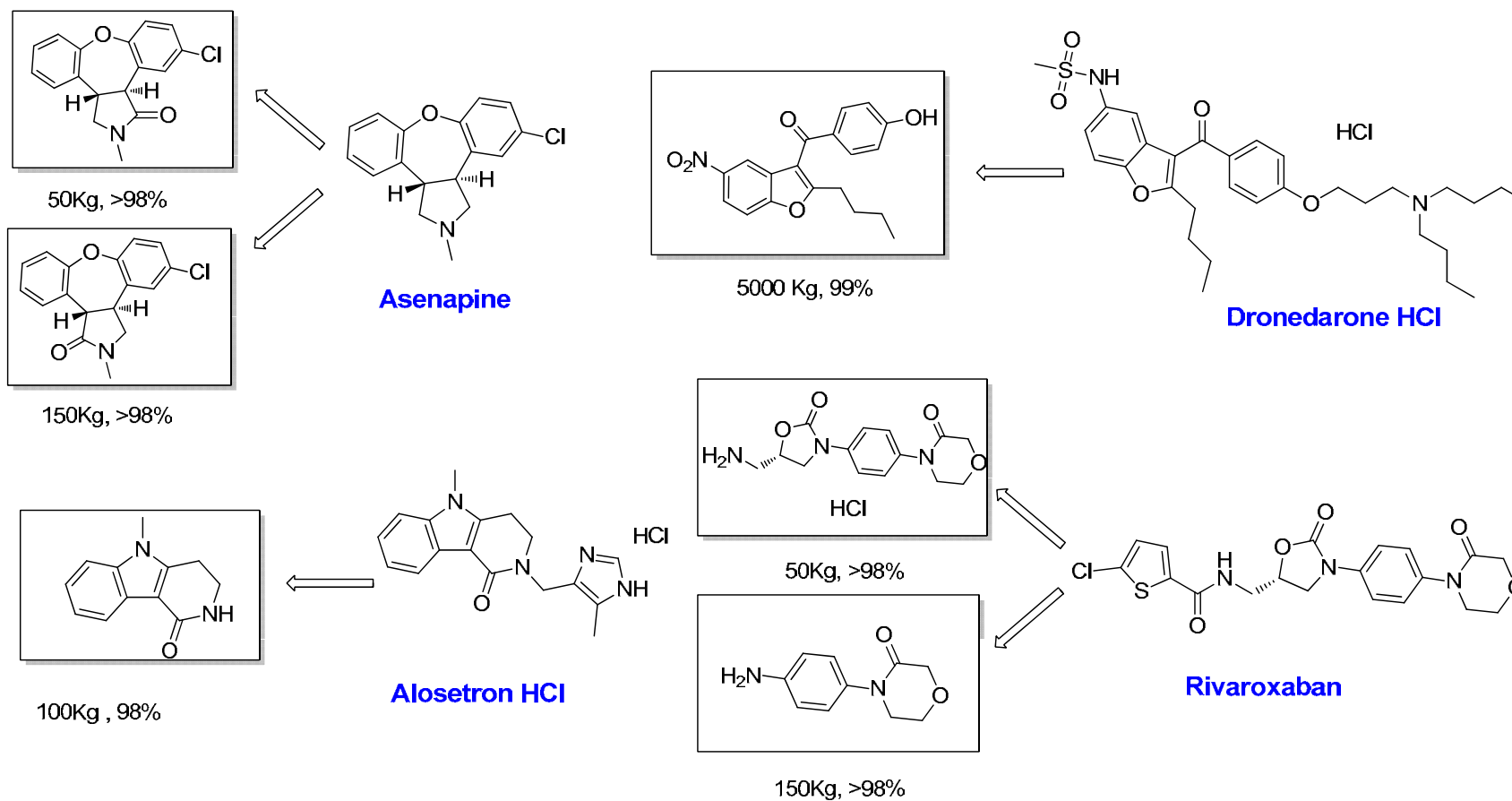
Tolvaptan



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- Examples of API intermediates with DMF Tech-package (2010)





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- Intermediates for APIs Pipeline (2011-2013)

### **Anti-Cancer**

Abiraterone

Pralatrexate

Amrubicin

Vemurafenib

Flavopiridol

Tivantinib

Cabozantinib

### **Type II diabetes**

Canagliflozin

Dapagliflozin

Lingliptin

### **HCV**

Boceprevir

Telaprevir

### **Others**

Azilsartan

Ticagrelor

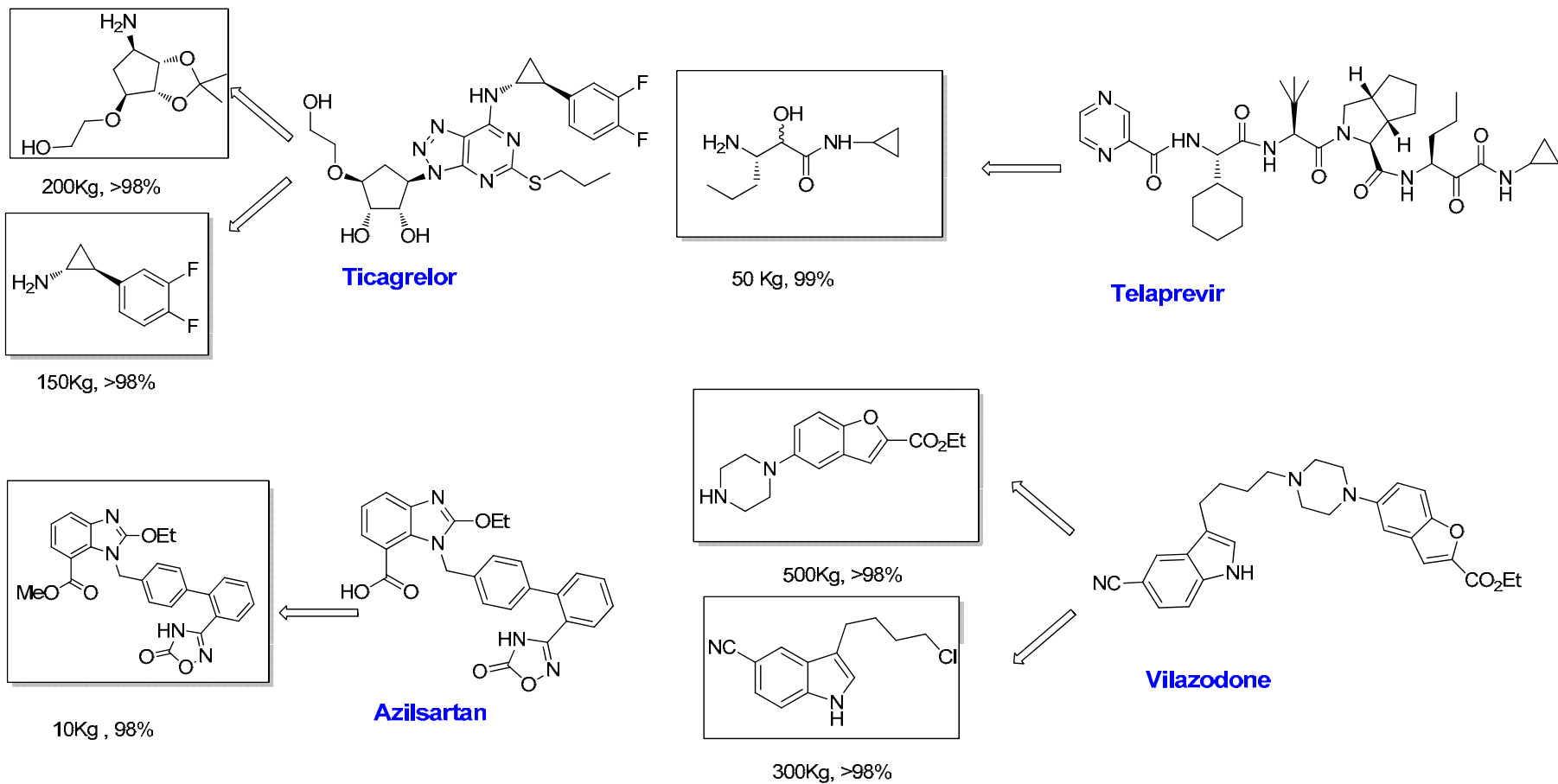
Vilazodone



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- Examples of API intermediates with DMF Tech-package (2011--)





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- Intermediates for APIs Pipeline (2014)
- 2014年研究的药物

**Anti-Cancer 抗肿瘤**

Carflizomib 卡非佐米  
Ibrutinib 依鲁替尼  
Ceritinib 色瑞替尼  
Olaparib 奥拉帕尼  
Palbociclib 帕布昔立布  
Regorafenib 瑞格非尼  
Tpiracil HCl

**Type II diabetes 糖尿病**

Empagliflozin 依帕列净  
Ipragliflozin 伊格列净

**Others 其他**

Apremilast 阿普斯特  
Bazedoxifene acetate 醋酸巴多昔芬  
Bedaquiline 贝达喹啉  
Macitentan 马西替坦  
Favipiravir 法匹拉韦  
Tedizolid



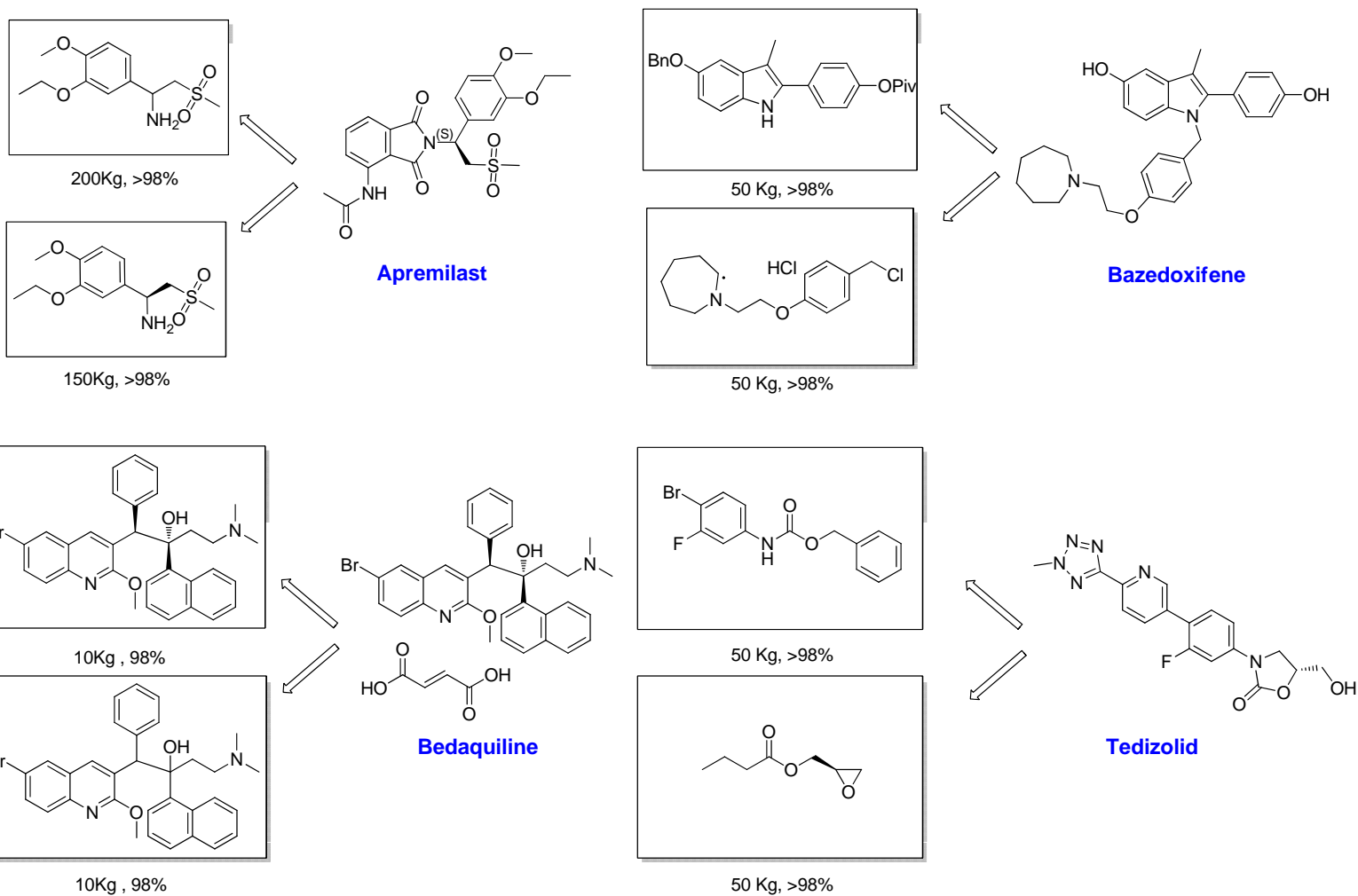
\* 全套API申报资料

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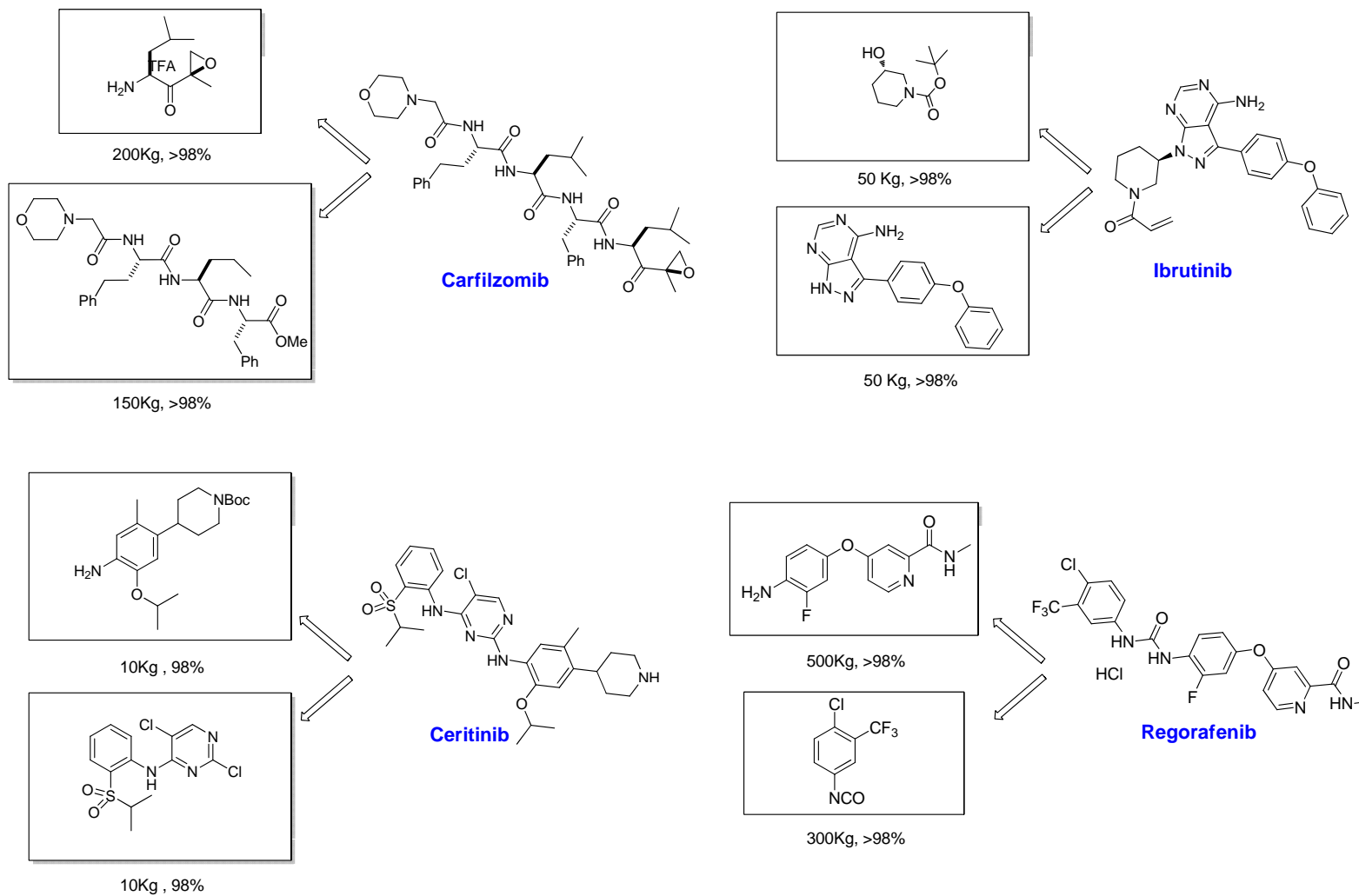




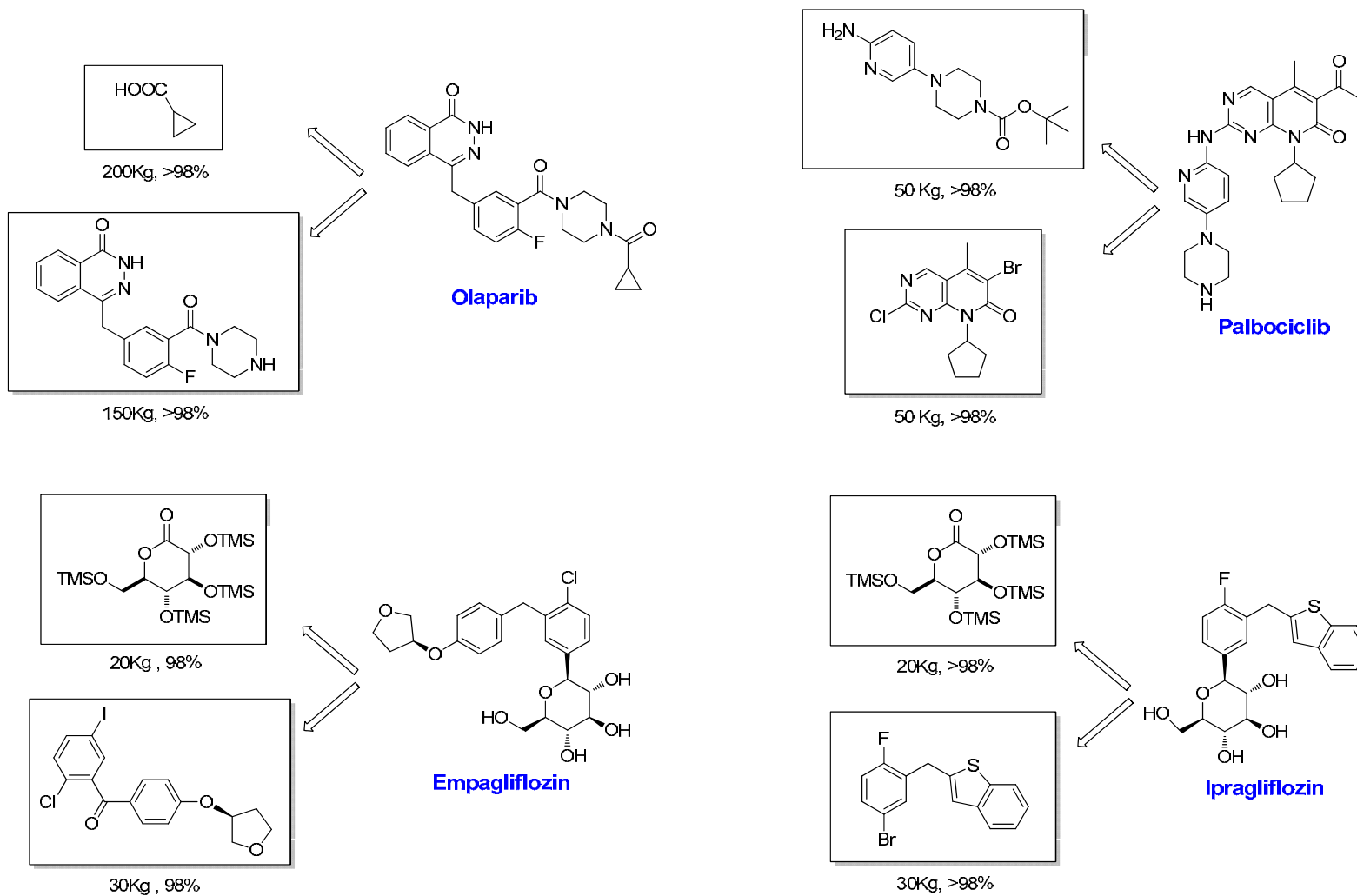
• Examples of API intermediates with DMF Tech-package (2014)



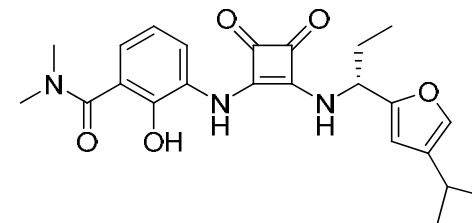
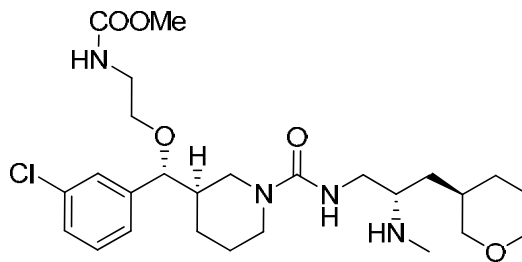
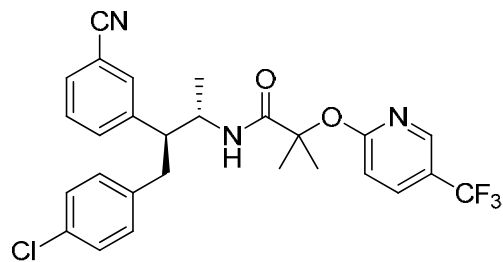
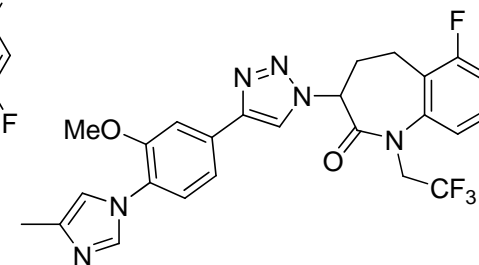
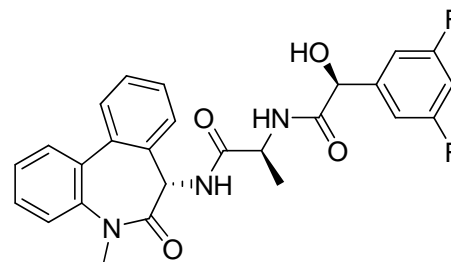
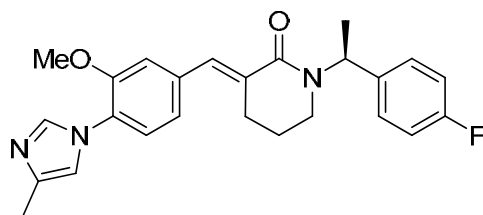
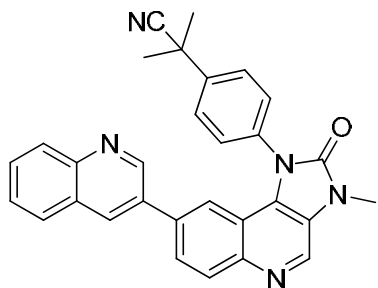
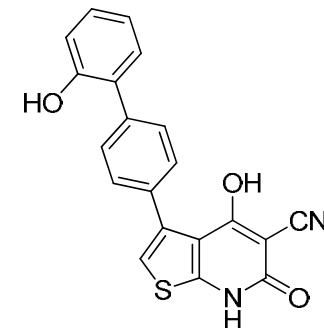
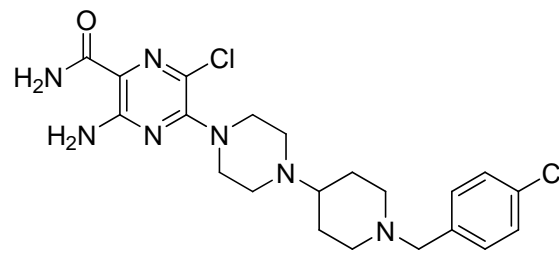
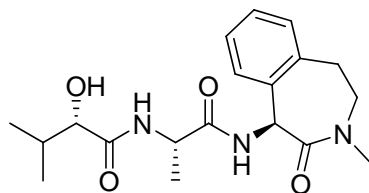
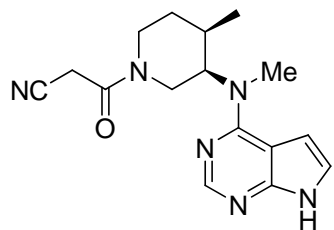
• Examples of API intermediates with DMF Tech-package (2014)



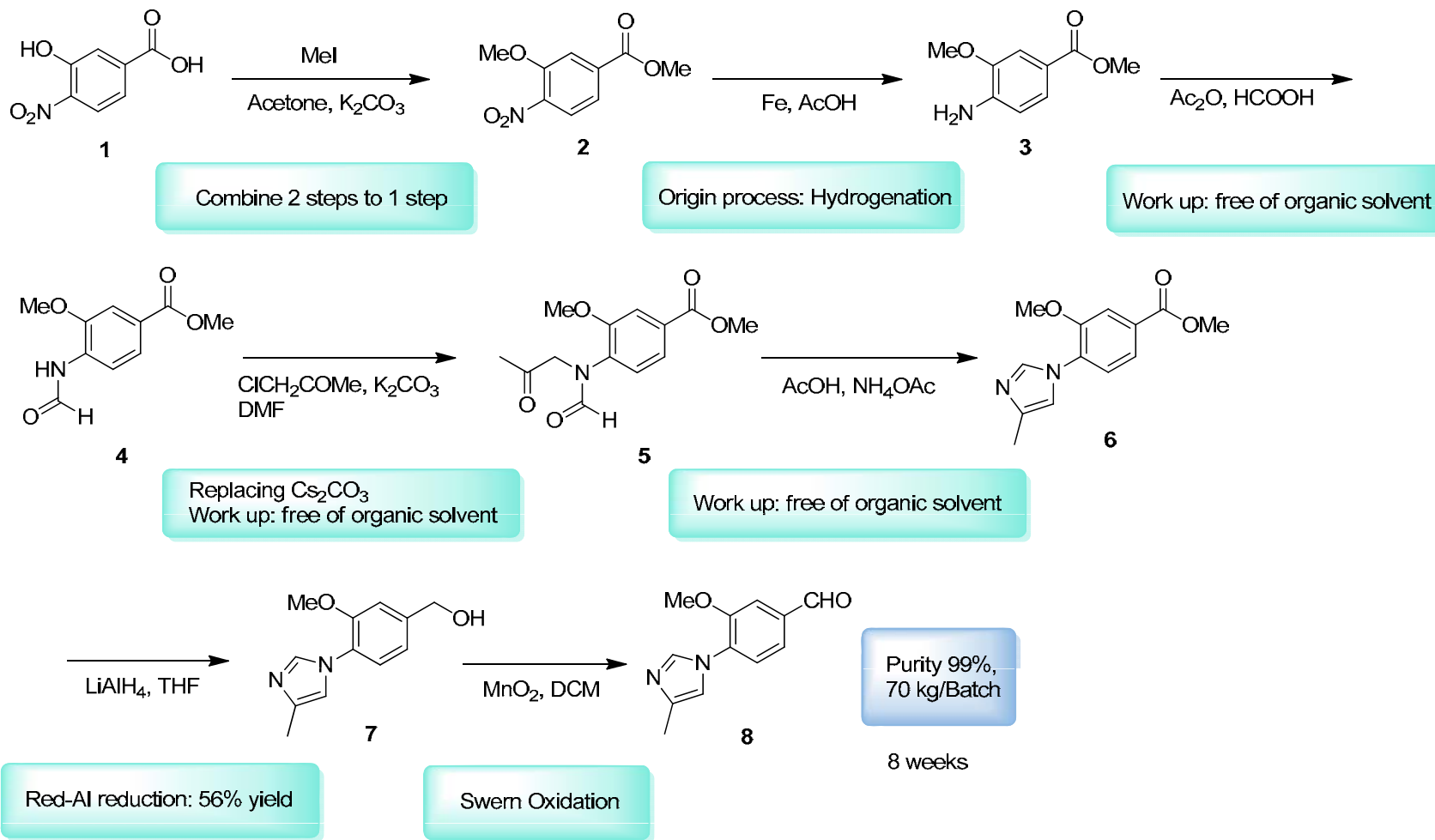
• Examples of API intermediates with DMF Tech-package (2014)



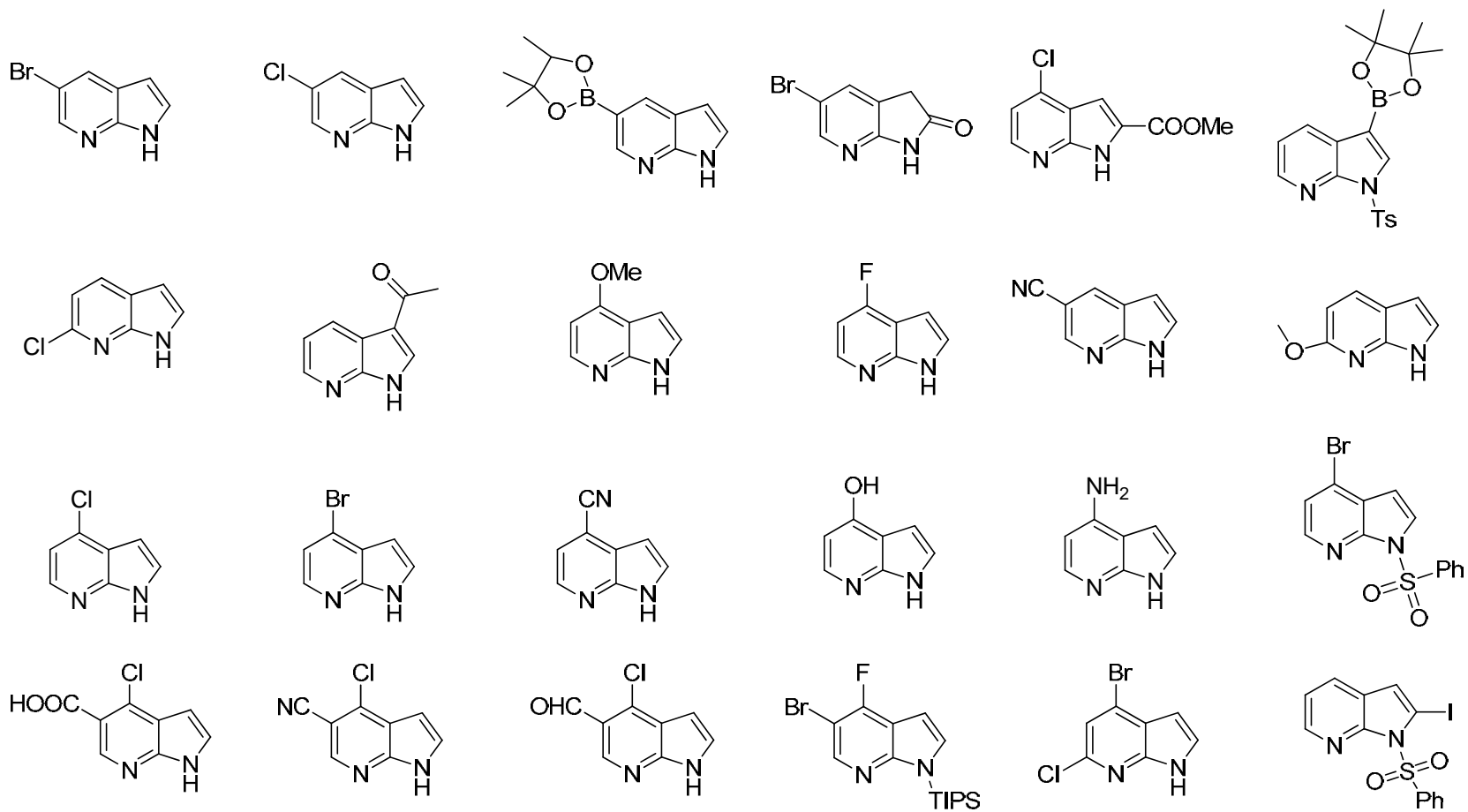
**Reference Compounds for Biorganic and Medicinal Chemistry Research**  
**From 1g to 500grams**



• Contract and Custom Manufacturing

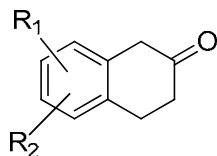


7-Azaindoles from kg to >100kg scale

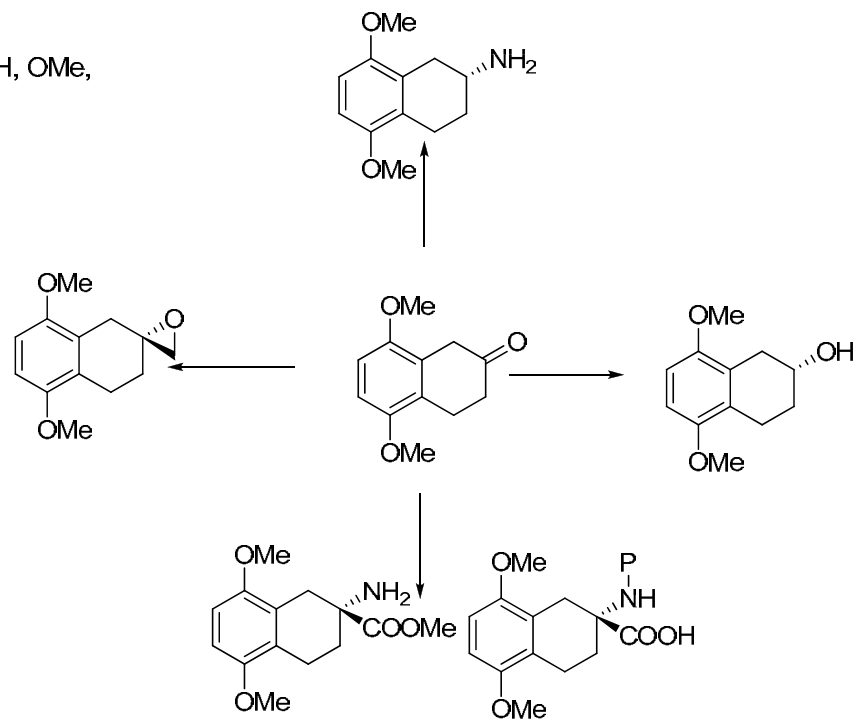
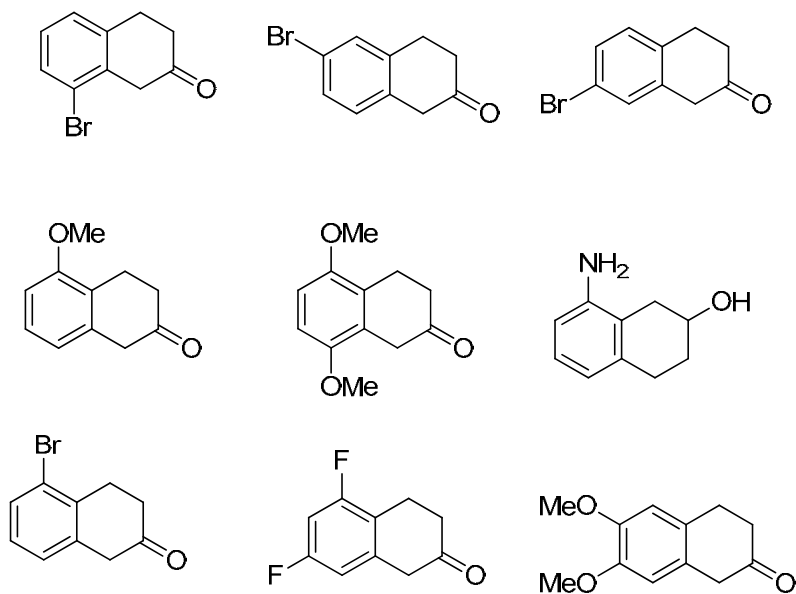




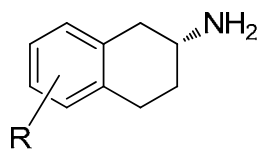
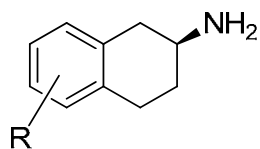
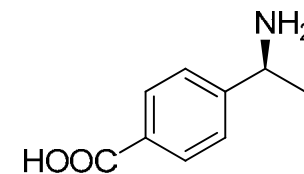
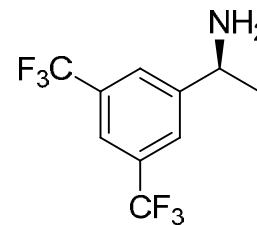
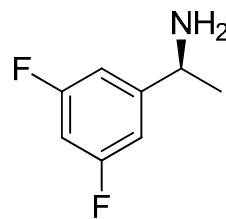
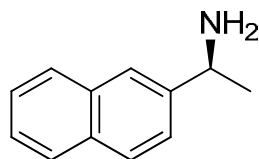
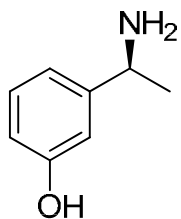
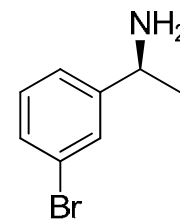
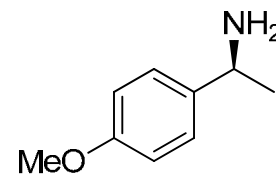
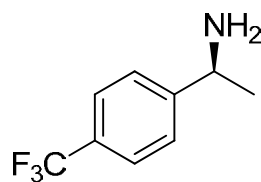
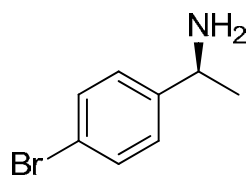
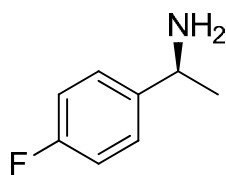
### Tetralones Series



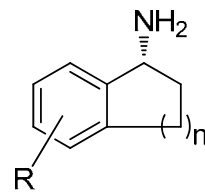
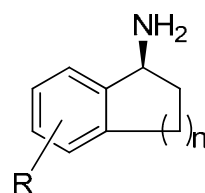
R = Alkyl, NH<sub>2</sub>, Cl, F, Br, I, CN, NO<sub>2</sub>, OH, OMe,



## Chiral amines

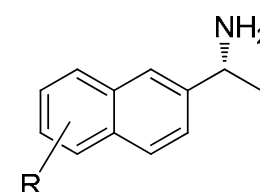
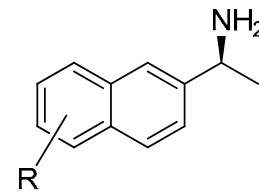


R = F, CF<sub>3</sub>, Br, Cl, OMe, etc.



R = F, CF<sub>3</sub>, Br, Cl, OMe, etc.

n = 1, 2



R = F, CF<sub>3</sub>, Br, Cl, OMe, etc.



## ***The Consultants of Chemexpress***

- Prof. Dan Yang, *The University of Hong Kong*
- Prof. Pauline Chiu, *The University of Hong Kong*
- Prof. Ying Li, *Lanzhou University*
- Prof. Tianlin Liu, *Nankai University*
- Prof. Bo Sun, *Nankai University*
- Prof. Yuanchao Li, *SHIMM*





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*Thank You!*

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