EUROPIN
A European Pharmacoinformatics Initiative
Integrating Research, Teaching and the New Media

Gerhard F. Ecker

Emerging Field Pharmacoinformatics

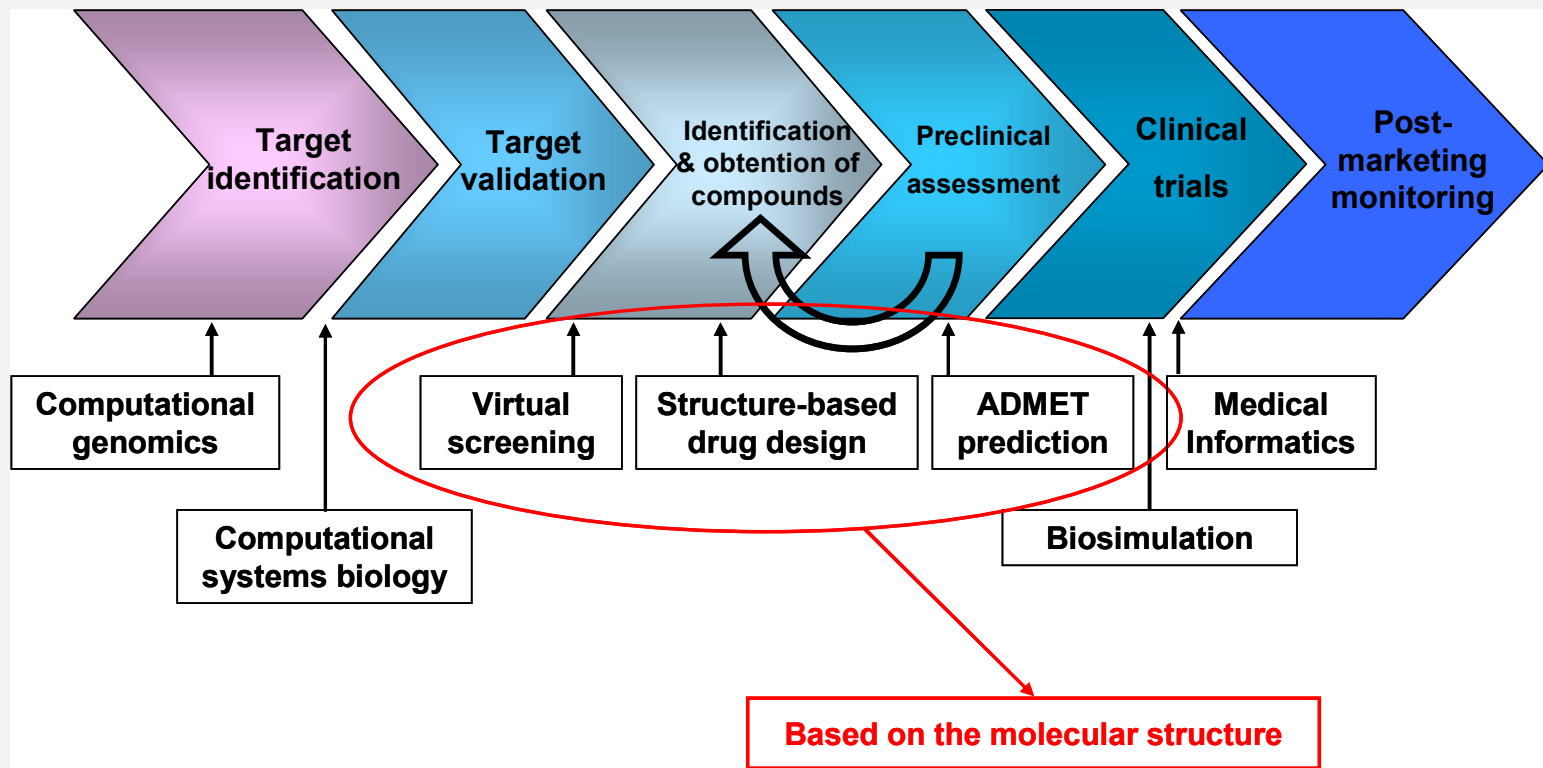Department of Medicinal Chemistry, University of Vienna

Althanstrasse 14, A-1090 Wien, Austria

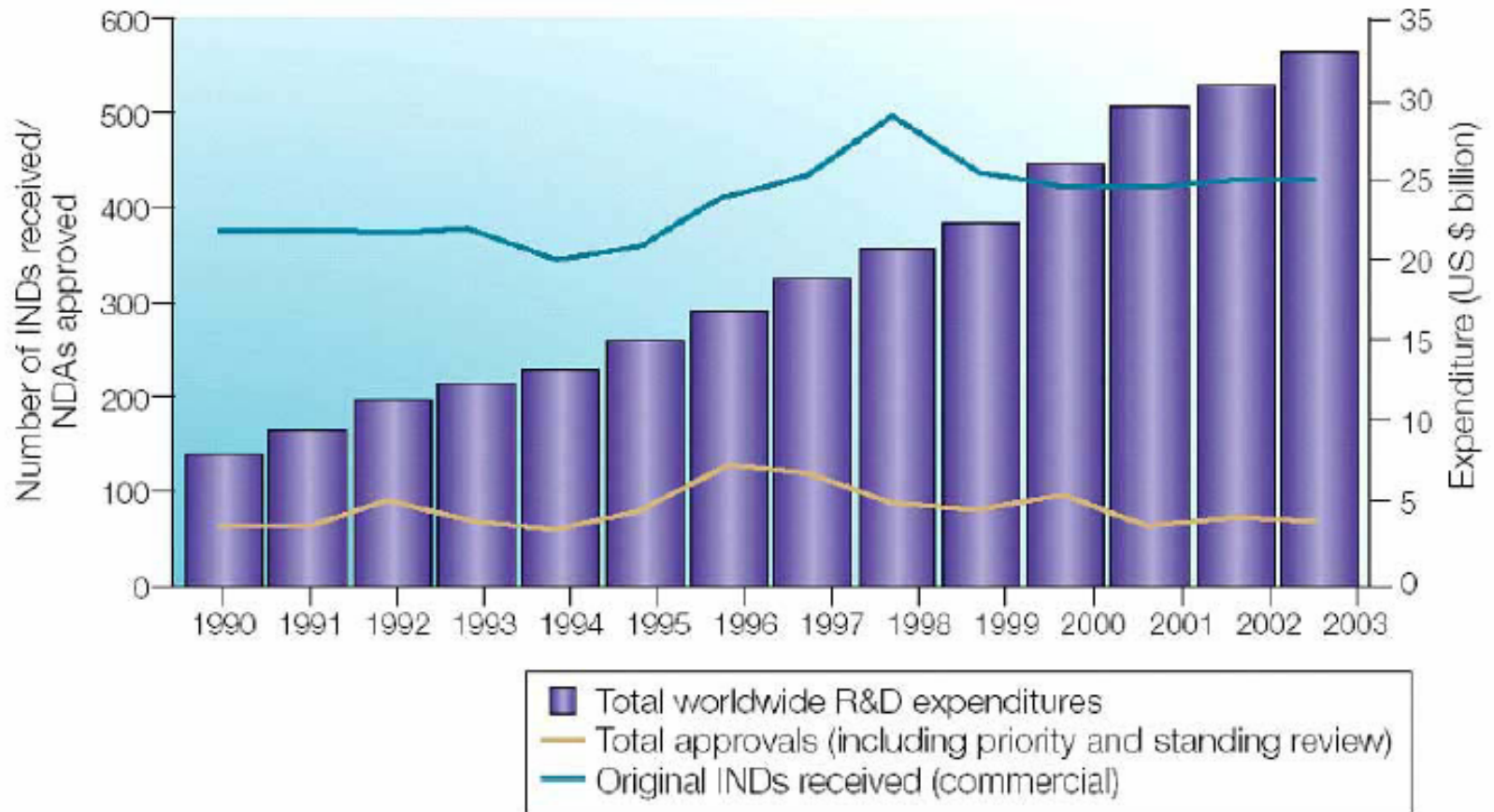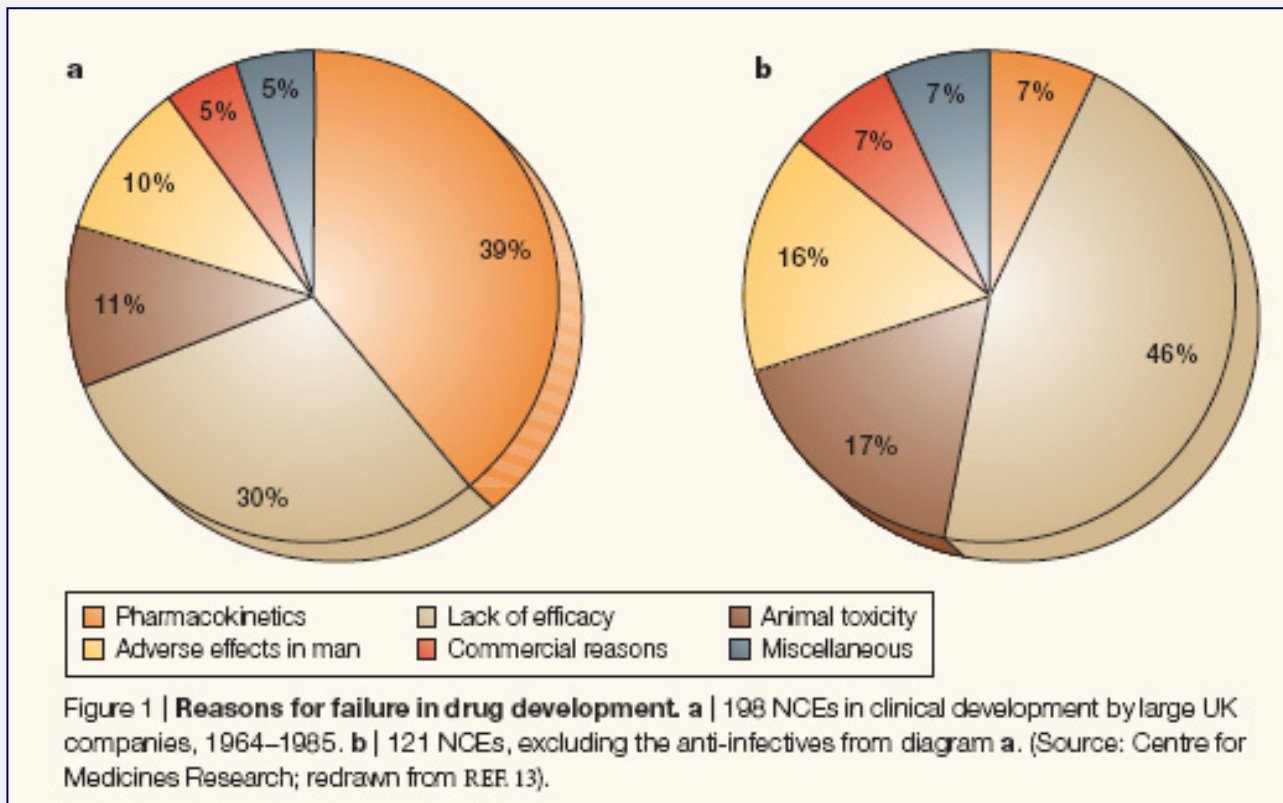e-mail: gerhard.f.ecker@univie.ac.at; http://www.europin.at

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G. Ecker, Vienna 2008

Pharmacoinformatics

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The Productivity Gap in Pharmaceutical Industry

Legend:
- Total worldwide R&D expenditures
- Total approvals (including priority and standing review)
- Original INDs received (commercial)

T.T. Ashburn and K.B. Thor, Nature Rev. Drug Discov. **3**, 673-683 (2004)

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Drug Development - Failures

Figure 1 | Reasons for failure in drug development. a | 198 NCEs in clinical development by large UK companies, 1964–1985. b | 121 NCEs, excluding the anti-infectives from diagram a. (Source: Centre for Medicines Research; redrawn from REF. 13).

Legend:
- Pharmacokinetics
- Adverse effects in man
- Lack of efficacy
- Commercial reasons
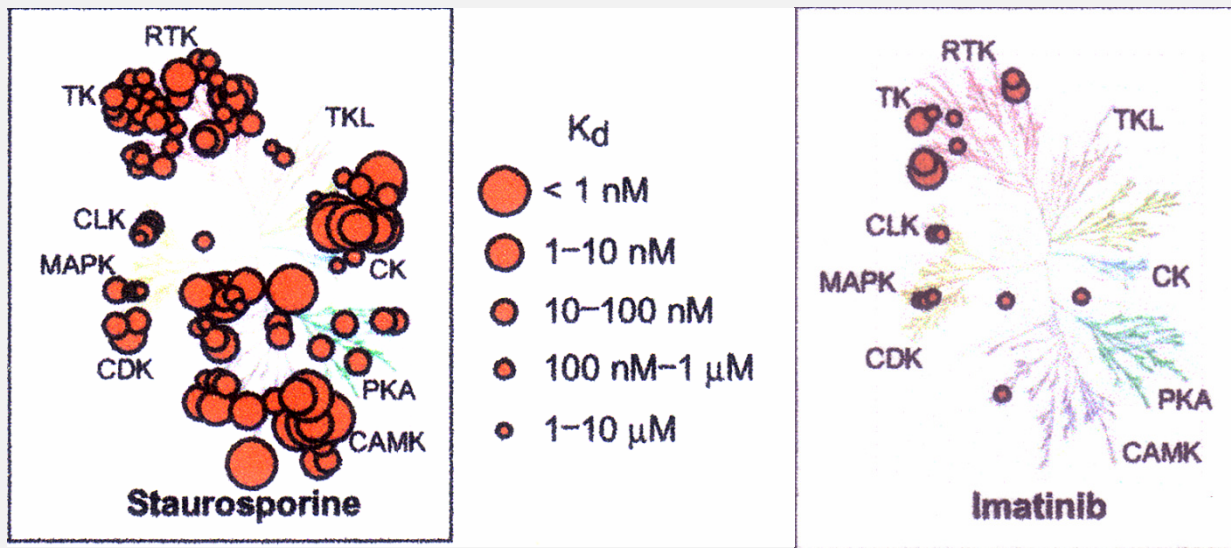- Animal toxicity
- Miscellaneous

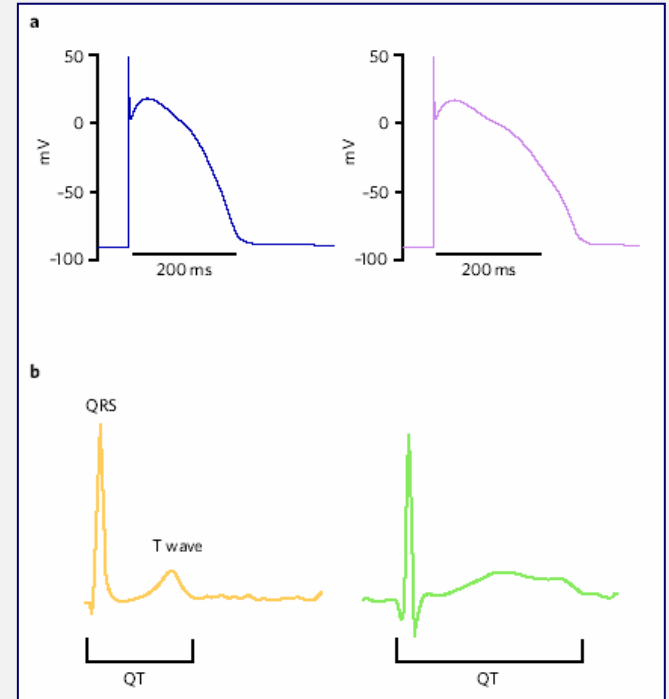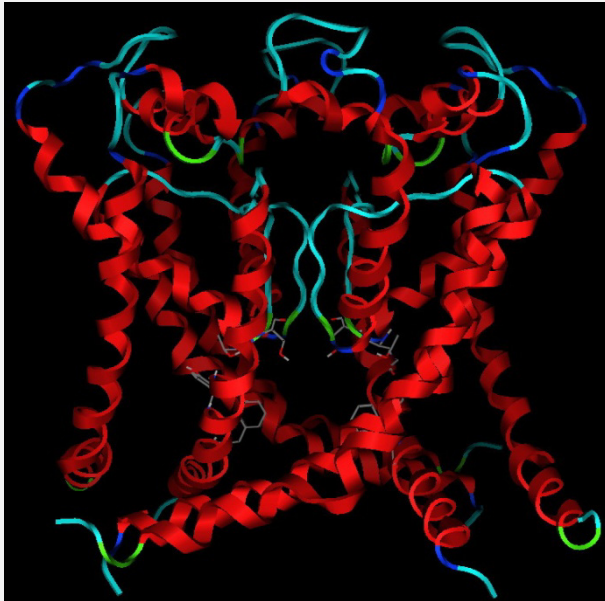*Kubinyi, Nature Rev Drug Discov 2, 665 (2003)*
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Paradigm Shifts

- One drug – one target
- One drug – multiple targets (kinases)

Paradigm Shifts
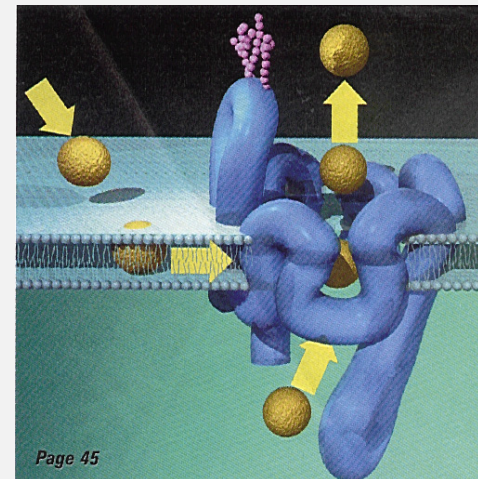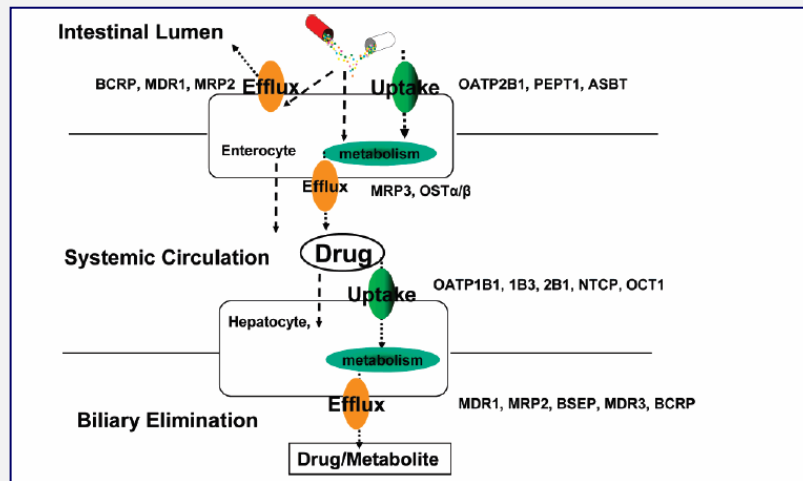
- Many drugs – one target (hERG channel)

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Paradigm Shifts

- Many drugs – many targets (ABC-transporter)

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Chemogenomics

The Chemical Universe

10^{40} - 10^{120} compounds with C, H, O, N, P, S, F, Cl, Br, I, and MW < 500 ??

Chemogenomics: The Chemical Universe
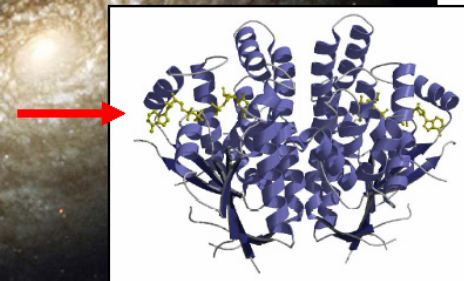
..... tested against the Target Universe

H. Kubinyi, Vienna 2006

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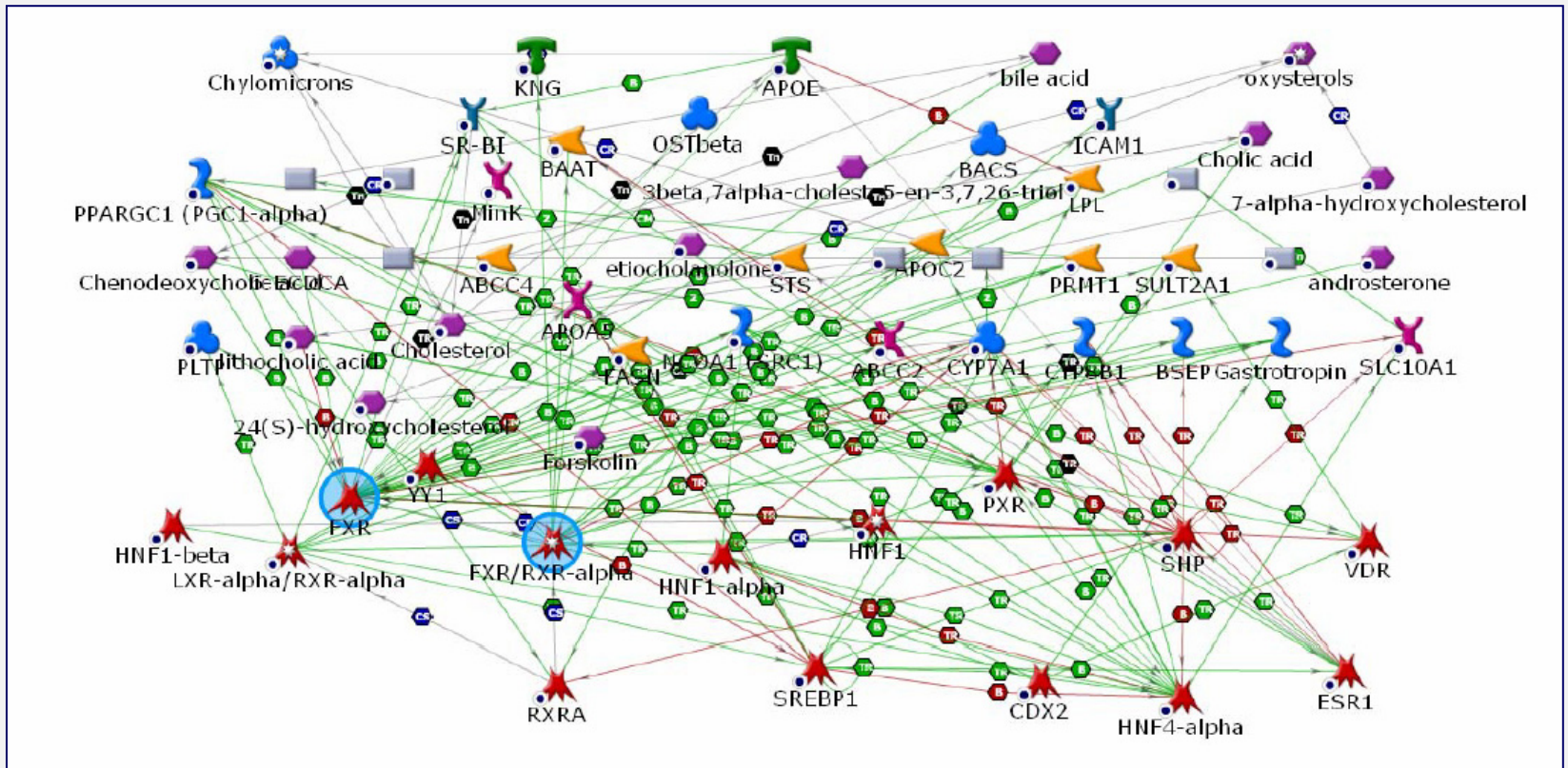
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A Network of Targets

Ekins S, unpublished

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EUROPIN – A European Pharmacoinformatics Initiative

EUROPIN brings together **six institutions** from five European Countries to develop a **joint PhD program on Pharmacoinformatics** in order to promote training and education of top level scientists in this field. It will provide a **platform for training through research** focusing on methods and applications used in computational drug design and development.

University of Vienna (coordinator)

Pompeu Fabra University, Barcelona

Gdansk University of Technology

Martin-Luther-University Halle-Wittenberg

University of Parma

University of Perugia

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EUROPIN – Concept I

- **SAB** for permanent monitoring the quality; 5 experts from Indistry/SMEs

- **Supervision contract** between host institution and student; supervisor team (2 scientists, 1 SAB member)

- **Summer School** for basic training and soft skills with strong participation from Industry; *Sept 13-18, 2009*

- **3 Scientific Retreats** where students report on their progress, 1-2 days for enabling skills

- **Europin Challenge** at year 3; students are divided into two groups and work for one week on a case study defined by the SAB

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EUROPIN – Concept II

- **Thesis** written in English
- **2-3 publications** in journals of the top quartile
- **International calls** for students, consensus decision made by supervisors
- **Joint supervision** via web-conferences and e-lab books
- Workshop for **training of the supervisor** to guarantee equal standards throughout the consortium
- Extensive use of **internet technology**; eLearning platform, e-lab books, regular electronic conferences for joint supervision, joint software licenses

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EUROPIN – Concept III

- Create **e-courses and modules** which might be used also outside the consortium; **PharmXplorer** as platform
- **Mobility as a strategic tool** to broaden hands-on expertise of students; coherent research plan to allow mobility of students and supervisor
- External **Scientific Advisory Board** to ensure top quality of the program and the students
- Input from **EFMC**, **Eufeps** and **IMI**
- **Implementation** starts autumn **2009**

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EUROPIN - Vision

EUROPIN will be the **nucleus for a European network** of actors in the field of Pharmacoinformatics, which will

-) create a **framework for teaching and training** in the application of information technology in pharmacy

-) **map the future trends** in the use of pharmacoinformatics tools into a joint ongoing training through research activity

-) approach **European Pharmaceutical Industry** and SMEs by including the needs of Industry into the training

-) create a framework for the sustainability of a **European Pharmacoinformatics Network** active in training of early stage researchers**.**

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