



U.S. - Africa Private Sector Health Forum



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the private sector: the missing piece in African healthcare

Pharmacology And Biotechnology Investments For Health In Africa

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Natural Products – Preferred for Specific Indications

- Anticoagulant

- >90% of small molecules are Natural Product derived

- Antibacterial

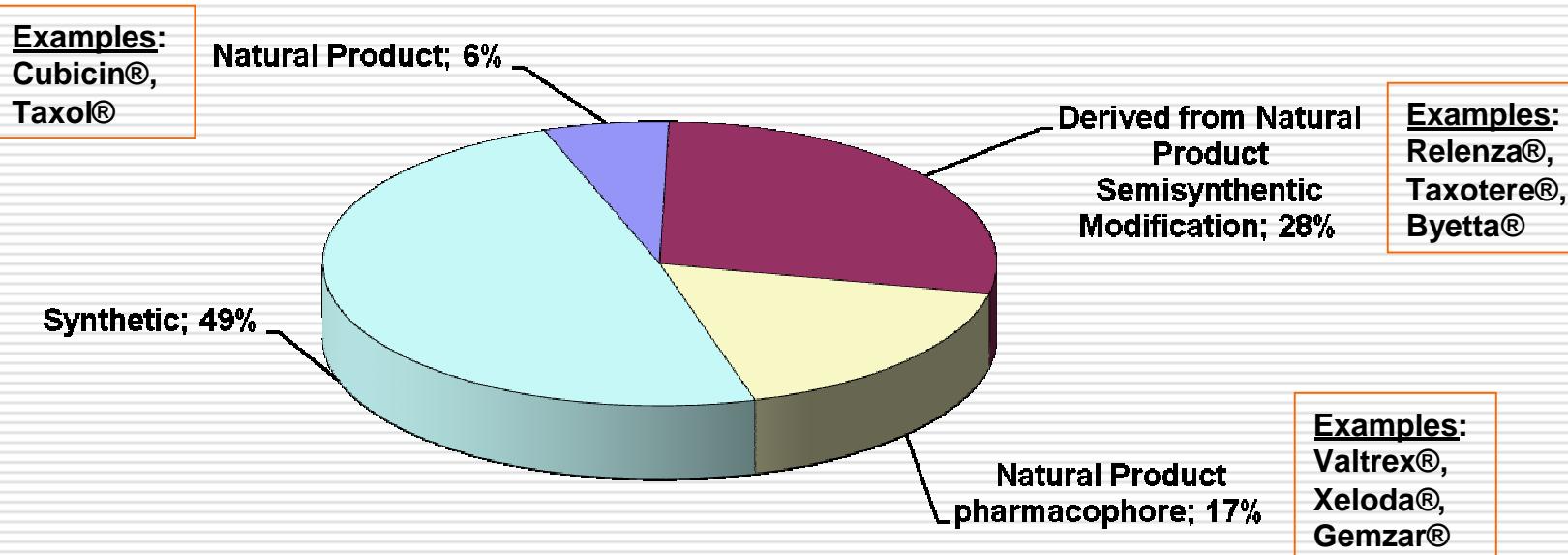
- 77% are Natural Product or Natural Product derived

- Anticancer

- 63% of small molecules are related to Natural Products

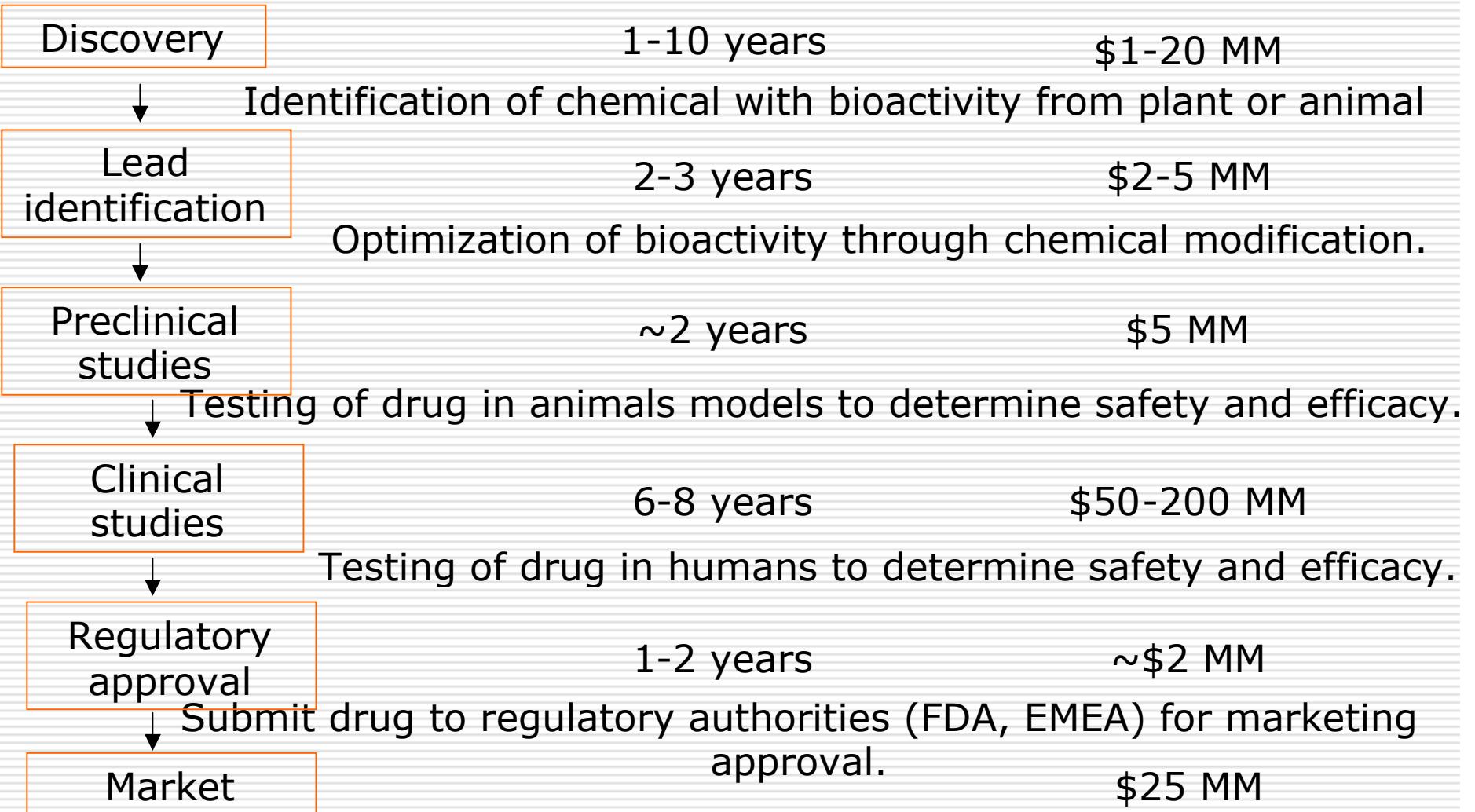
Percentage of Pharmaceutical Drugs

- 1981 – 2006: Percentage of small molecule NCE



Half of all small molecules were Natural Products or derived from Natural Products

Pharmaceutical Development Process



Pharma Companies – Natural Products

- Pharma companies with Natural Products divisions
 - Wyeth
 - Novartis
- Pharma companies outsourcing the Natural Products discovery
 - Pfizer – Griffith University (Australia)
 - Lilly – Albany Molecular Research
- Smaller Pharma companies
 - MerLion – houses one of the largest and most diverse natural product collections
 - PharmaMar – discovery of new molecules from organisms living in the sea
 - Phytopharm – develops products based on medicinal plants which have history of clinical use

Two Examples of Pharmaceuticals derived from African plants

- ombrabulin (AVE8062)
 - an intravenous combretastatin A4 analog
 - natural combretastatin molecules are present in the bark of *Combretum caffrum*, commonly known as South African Bush Willow
 - Phase III study for advanced sarcoma and NSCLC by Sanofi-Aventis
- Physostigmine
 - From the Nigerian Calabar bean
 - Isopto Eserine® for Glaucoma
 - Xalieve™ in Phase II clinical studies for treatment of dry mouth by Calabar SE, a pharma company from Sweden