Empowering Product Discovery through Biodiversity

Edgard Marx
Natural Products & Drug Discovery

- Morphine extracted from opium poppy
- Discovery of penicillin
- Vinca alkaloids, cancer treatment
- Artemisinin discovery
- Lovastatin approved as lipid-lowering agent
- Prialt® Ziconotide

- Acetylsalicylic acid commercialization
- Use of tubocurarine as anaesthetic
- Taxol discovery
- Captopril approval for hypertension treatment
- Oseltamivir Tamiflu®
Product Development (Today)
R&D Spending

**Japan** $170.5B

**U.S.** $476.5B

**China** $370.6B

R&D Spending by Country (in PPP$s)

- **More than $100B**
- **$50B - $100B**
- **$10B - $50B**
- **$1B - $10B**
- **$500M - $1B**
- **$100M - $500M**
- **Less than $100M**

Article & Source:
https://howmuch.net/articles/research-development-spending-by-country
http://uiw.uiw.edu.org
A Better Way

- Collect
- Organization, Cleansing & Storage
- Training
- Product Discovery
- Data & Model Refinement
- Search & Discovery
Size of Amazon state
Brazil is one of the 17 countries considered as megadiverse. **9.5% of all known living species**

~21% of all plant species

Brazil is a conservation priority and especially responsible for a change in concepts for sustainability.
Chemical Compounds

Number of Occurrences per State

Distribution per Biome

AMAZON Rainforest

CAATINGA Scrubland

PANTANAL Wetland

CERRADO Savanna

ATLANTIC FOREST Rainforest

PAMPAS Plain Fields

Chemical Compounds

Number of Occurrences per State

Distribution per Biome

0 16% 0.2% 6.6% 0.4% 3.1% 0.6% 0.8% 0.9% 0.4%

1.3% 1.3% 14% 0.5% 2% 0.9% 3.1%

2.2% 2.6% 1.2%

0.3% 0.2% 0.3% 0.0%

CAATINGA Scrubland

AMAZON Rainforest

PANTANAL Wetland

CERRADO Savanna

ATLANTIC FOREST Rainforest

PAMPAS Plain Fields

0 780
Knowledge Extraction

bioactivity

species

compound
“Somewhere, something incredible is waiting to be known.” Carl Sagan

Thank you 😊

- http://dinobbio.aksw.org
- https://twitter.com/dinobbio
- https://twitter.com/edgardmarx
- https://aksw.org/EdgardMarx.html