

Contemporary Routes of Biopiracy



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Evolution of Biopiracy



- Originated in colonial “come and take it” practice (e.g. rubber to Asia, potatoes to Europe, coffee to the world).
- Age of Discovery patterns were extended into late colonial and early post-colonial times (e.g. 1940s-70s were prime time for collection in agriculture).
- Came to prominence as an international issue ~25 years ago, with two distinct developments:
 - Application of intellectual property to living things (and extension of the practice via trade agreements)
 - Affirmation of state sovereignty over genetic resources in the Convention on Biological Diversity.

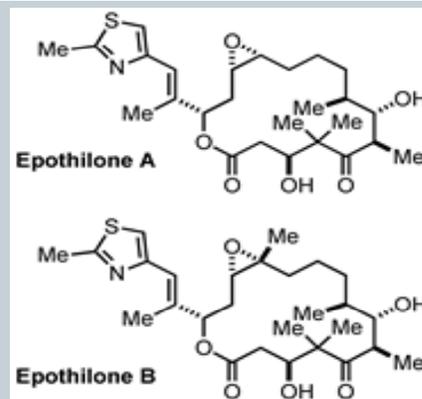


- **Contemporary biopiracy typically involves IP + a more complex approach to access to resource. Typically including:**
 - Intermediaries (e.g. academia, aid projects, etc.) between end user and source.
 - Repurposing of genetic resources to ends not explicit at time of access.
 - Reuse of materials collected previously.
- **Today:**
 - The cowboy days are ending (slowly). We are undoubtedly moving to a more regulated system of access to genetic resources globally.
 - But: Will efforts at regulation legitimize biopiracy or create the tools necessary to prevent it?
- **Following examples intended to illustrate common patterns observed.**

Routes of Biopiracy 1

Ex-Situ Collections: Microbes

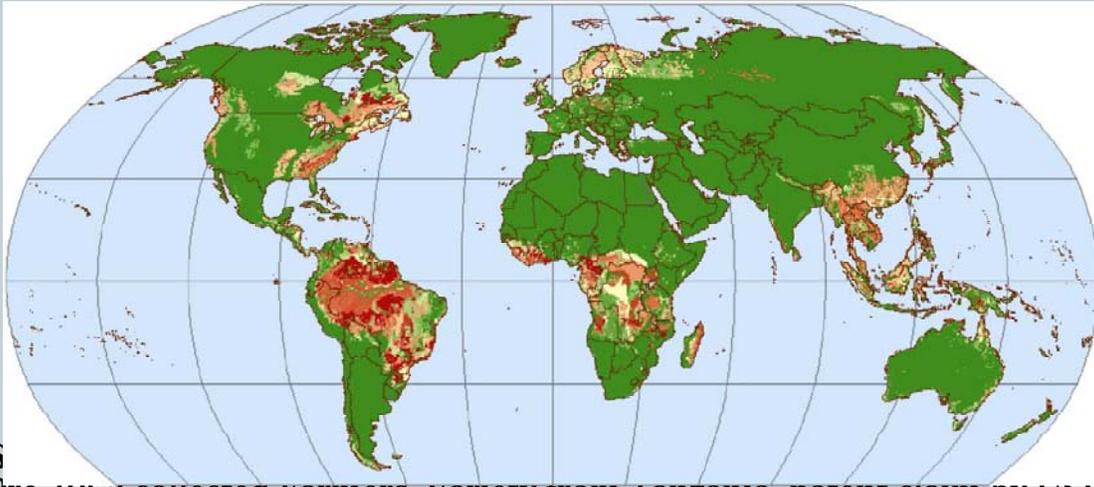
- Epothilones: Cancer drugs (anti-tumor). Several in development, one commercialized @ US\$120m/year.
- Many patents & applications: Bristol Myers (ixapebilone), Novartis (patupilone), Bayer (sagopilone), and more.
- Isolated and produced by a soil bacterium collected circa 1980 “along the banks of the Zambezi”.
- Value not understood until recently (initial interest was in antifungal drugs).



Ex-Situ Collections: Seeds



Soil Aluminum Toxicity – A Global Issue



S Pre-1963 collected Farmers variety from Tanzania, patent claim by USDA, Embrapa, and Texas A&M University. **i.**

Routes of Biopiracy: *The Professor*



University/Research Policies



Under Bayh-Dole type laws, University and Institutional Policies:

- Mandate reporting of innovations
- University may claim them.
- Reporting/Assignment of Interest a condition of employment
- Legally enforceable (UWA v Grey)
- Research staff cannot waive, negotiate
- Includes incidental and subsequent discovery

These common policies preclude “non-commercial” research, in the context of access to genetic resources. (US ~10/400)

Routes of Biopiracy: *The Aid Project*



Comparing benefits: US INTSORMIL Sorghum Project

- Training for African scientists (10-20 year), some improved germplasm from the US (nothing proprietary), limited technical consulting.
- INTSORMIL *grain* sorghum germplasm from Africa contributes US \$680 million per year to the US economy.
- INTSORMIL breeding lines released by Texas A&M University are one or both parents of 60% of the sorghum hybrids sold in the US. (Practically all under IP.)
- From 1996 to 2005, Texas A&M gave private US seed companies 213 sorghum breeding lines developed from INTSORMIL germplasm. (Reassigned internal breeding line numbers, subjected to IPR.)

USAID / Rutgers University Natural Products West Africa

Cooperation project provides assistance to West African countries on export of plant products.

Patent, and second application on extract of African nutmeg tree (*Pycnanthus angolensis*)

Patent application on extract of kinkéliba (*Combretum micranthum*) as novel treatment of diabetes and glycemic disorders.

Guinean research says otherwise.



Concluding Questions



- How does the scope of patentable subject matter in the biological sciences and biopiracy relate?
- What role, if any, does the patent system have in detection of biopiracy? (*Disclosure? If so, and possible, how to avoid pitfalls?*)
- How to account for and address the downsides of the “patentization” of “academic” research?